The Healthcare Cost and Utilization Project (HCUP)

Overview of the HCUP Databases and Resources

Agency for Healthcare Research and Quality

Updated August 2018

Presentation Objectives Part I

- Project Overview
- AHRQ and HCUP Partners
- The Making of HCUP Data
- HCUP State Databases
- HCUP Nationwide Databases
- How to Obtain HCUP Databases & Access HCUP Resources

What is HCUP?

Federal-State-Private Partnership

HCUP is a comprehensive set of **publicly available all-payer** health care data

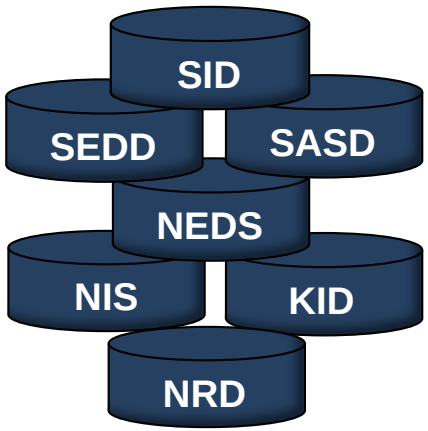
Includes **multi-year** inpatient and outpatient data based on **hospital billing** records

HCUP Databases

Online Tools

Analytics

User Support



HCUP Answers Questions

- Use of hospital, ED, and ambulatory surgery services
- Expected payer (all are included) of services
- Age, race and area of residence of patients
- Geography (county, State, national)
- Clinical detail
  - Conditions/comorbidities and procedures
  - Outcomes of care
- Cost of care
- Care for a patient across time** (revisits/readmissions)
- Access, quality, patient safety
- Trends over time in all of the above

Research Using HCUP Data

Costs of care	Between 2005 and 2014, the inflation-adjusted mean cost per inpatient stay increased by 12.7 percent, from $9,500 to $10,900 (2005 and 2014 NIS & HCUP Fast Stats, Stat Brief #225).
Patient safety	Half of patients with community-acquired Methicillin-resistant Staphylococcus aureus (MRSA) in California had a diagnosis of cellulitis or skin ulcers. Among patients with hospital-acquired MRSA, the largest proportion (38 percent) were diagnosed with pneumonia. (2013 SID, Stat Brief #212)
Access to care	From 2000 to 2015, the share of Medicaid among nonneonatal, nonmaternal inpatient stays for those aged 18–44 years and 45–64 years increased by 74 percent and 68 percent, respectively (2000-2015 NIS, Stat Brief #235).
Readmissions	In 2014, 14 percent of inpatient stays were readmitted within 30 days. More than one-third of these readmissions occurred within 7 days, reflecting a 7-day readmission rate of 5 percent (2014 NRD, Stat Brief #230).

Research Using HCUP Data

Quality of Care	From 2010 to 2014, the rate of stays involving an adverse drug event (ADE) increased the most for ADEs caused by smooth muscle and respiratory drugs (up 24 percent) and decreased the most for ADEs caused by cardiovascular drugs (down 18 percent). (2010 and 2014 SID, Stat Brief #234)
Geographic variation	The mean rate of Cesarean section (C-Section) among total and low-risk deliveries was higher for hospitals in the Northeast and South compared with those in the Midwest and West. (2013 SID, Stat Brief #211)
Trends in practice	C-section, knee arthroplasty, hip replacement, and percutaneous coronary angioplasty (PTCA) were among the five most common operating room (OR) procedures (along with circumcision) and the five OR procedures with the highest aggregate hospital costs (along with spinal fusion). (2014 NIS, Stat Brief #233)
Opioid-related stays	Nationally, from 2010 to 2015, the share of opioid-related inpatient stays and emergency department (ED) visits shifted away from private payers and no insurance and toward public payers (Medicare and Medicaid) (2010 and 2015 NIS & NEDS & HCUP Fast Stats, Stat Brief #239).

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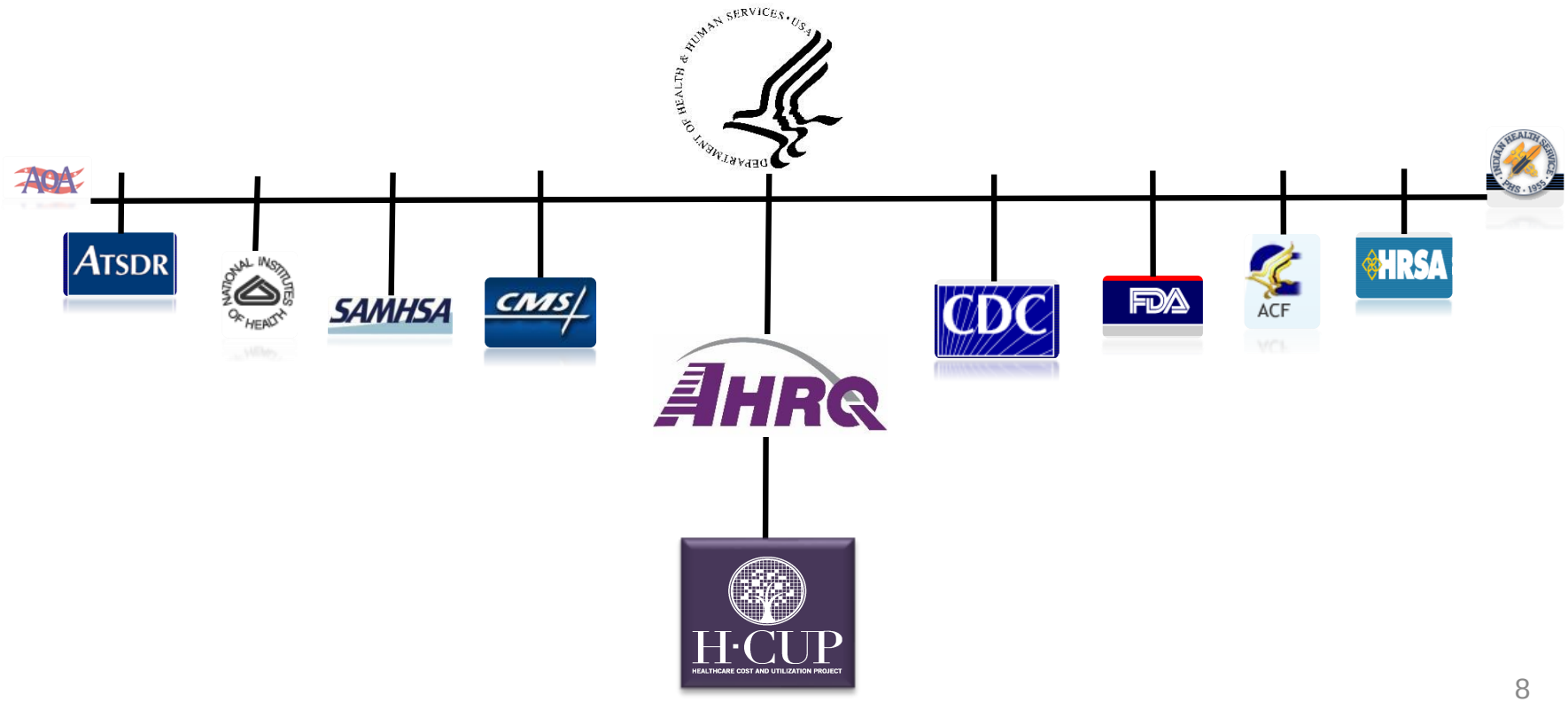
What is the Agency for Healthcare Research and Quality (AHRQ)?

The Agency for Healthcare Research and Quality (AHRQ) is a federal agency under the Department of Health and Human Services.



AHRQ's Mission

- To produce evidence to make health care
  - safer
  - higher quality
  - more accessible
  - equitable
  - affordable
- To work with HHS and other partners to make sure that the evidence is understood and used

The HCUP Partnership

State

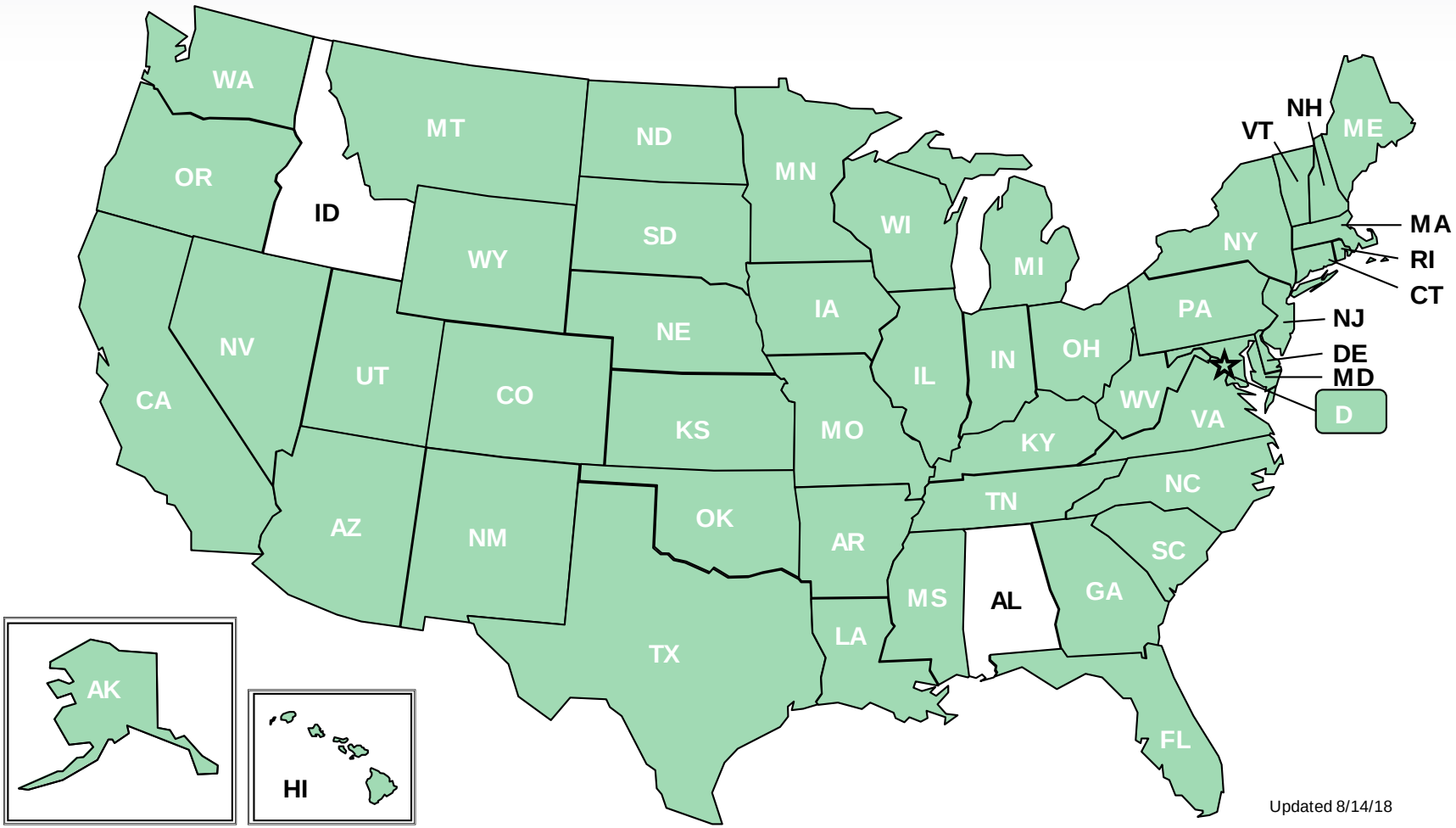
Federal

Industry

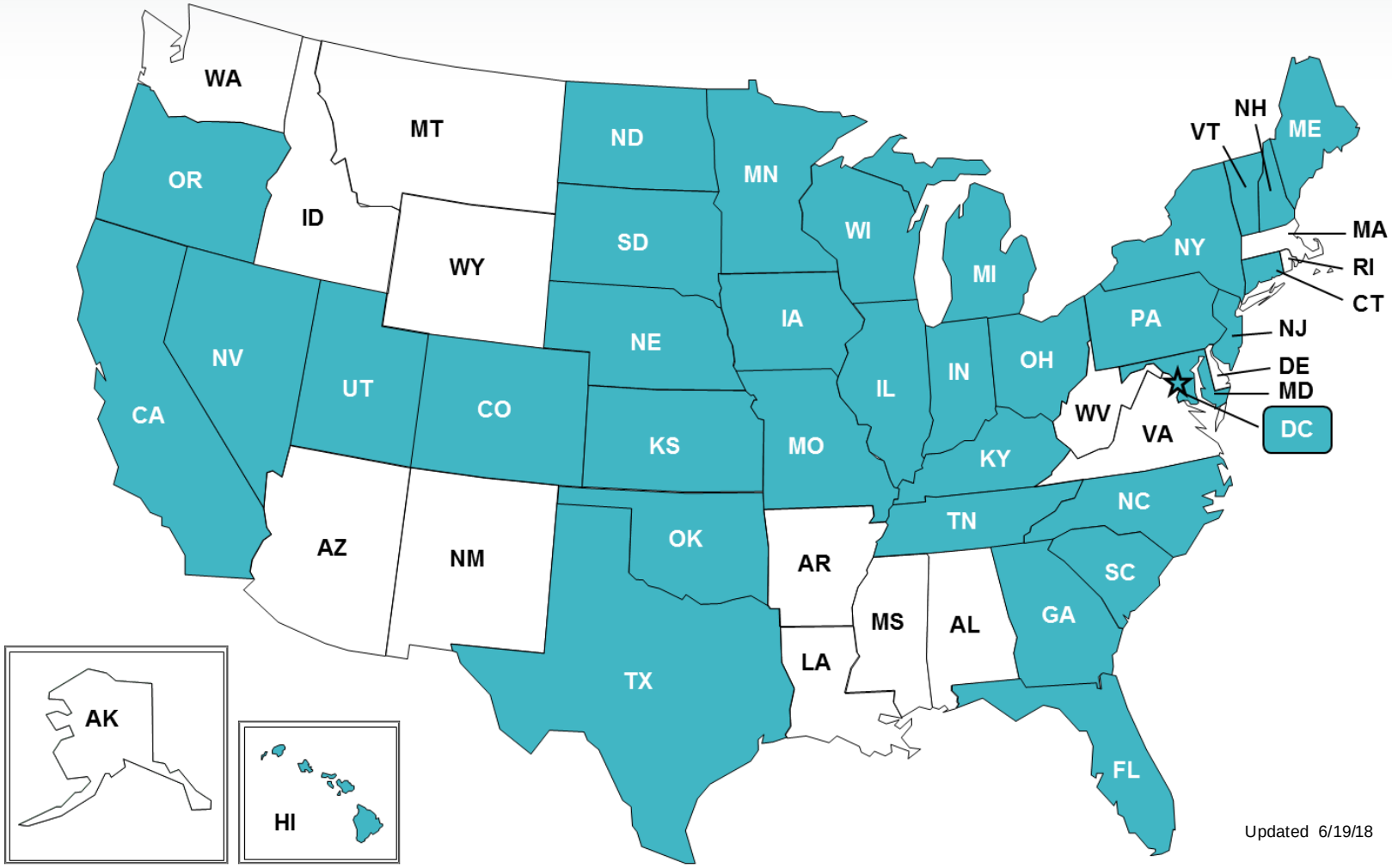
HCUP Data Partners

Alaska Department of Health and Social Services
Alaska State Hospital and Nursing Home Association
Arizona Department of Health Services
Arkansas Department of Health
California Office of Statewide Health Planning and Development
Colorado Hospital Association
Connecticut Hospital Association
Delaware Health Statistics Center & Office of Vital Statistics
District of Columbia Hospital Association
Florida Agency for Health Care Administration
Georgia Hospital Association
Hawaii Health Information Corporation
Illinois Department of Public Health
Indiana Hospital Association
Iowa Hospital Association
Kansas Hospital Association
Kentucky Cabinet for Health and Family Services
Louisiana Department of Health
Maine Health Data Organization
Maryland Health Services Cost Review Commission
Massachusetts Center for Health Information and Analysis
Michigan Health & Hospital Association
Minnesota Hospital Association (provides data for Minnesota and North Dakota)
Mississippi Department of Health
Missouri Hospital Industry Data Institute
Montana Hospital Association
Nebraska Hospital Association
Nevada Department of Health and Human Services
New Hampshire Department of Health & Human Services
New Jersey Department of Health
New Mexico Department of Health
New York State Department of Health
North Carolina Department of Health and Human Services
North Dakota (data provided by the Minnesota Hospital Association)
Ohio Hospital Association
Oklahoma State Department of Health
Oregon Healthy Authority
Oregon Association of Hospitals and Health Systems
Pennsylvania Health Care Cost Containment Council
Rhode Island Department of Health
South Carolina Revenue and Fiscal Affairs Office
South Dakota Association of Healthcare Organizations
Tennessee Hospital Association
Texas Department of State Health Services
Utah Department of Health
Vermont Association of Hospitals and Health Systems
Virginia Health Information
Washington State Department of Health
West Virginia Health Care Authority
Wisconsin Department of Health Services
Wyoming Hospital Association

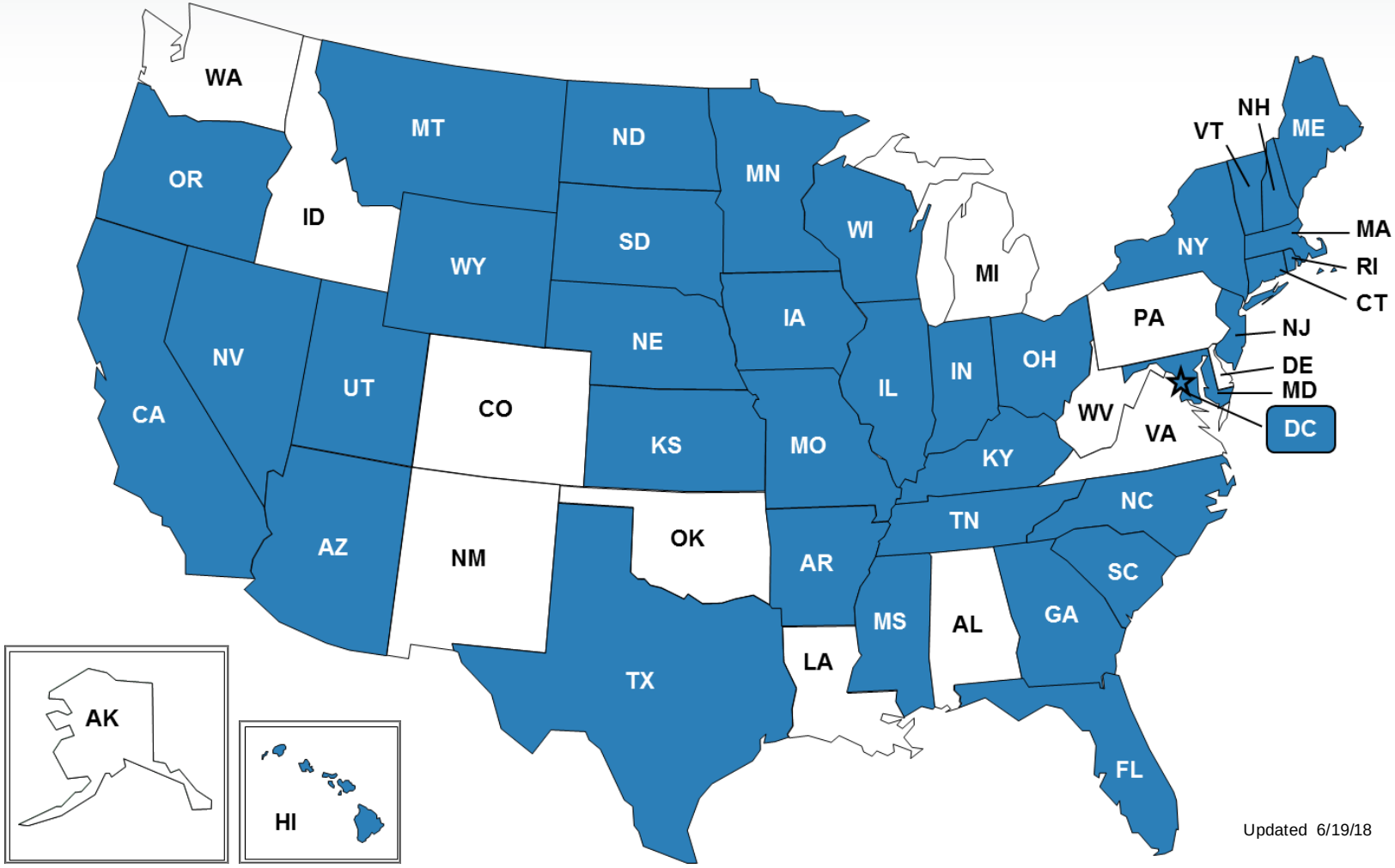
HCUP Partners Providing Inpatient Data



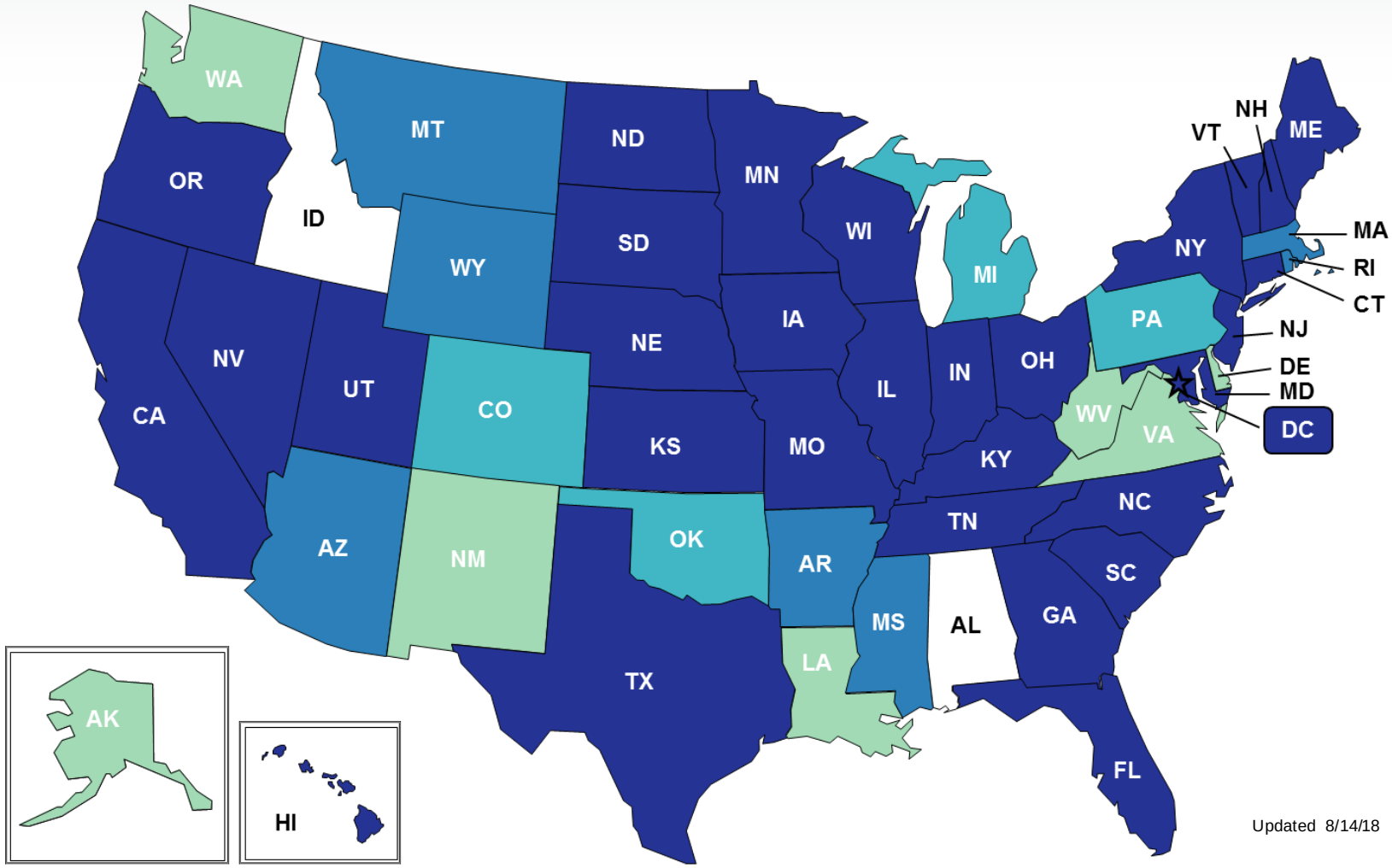
HCUP Partners Providing Ambulatory Surgery & Services Data



HCUP Partners Providing Emergency Department Data



HCUP Participation by Data Type



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The Foundation of HCUP Data is Hospital Billing Data

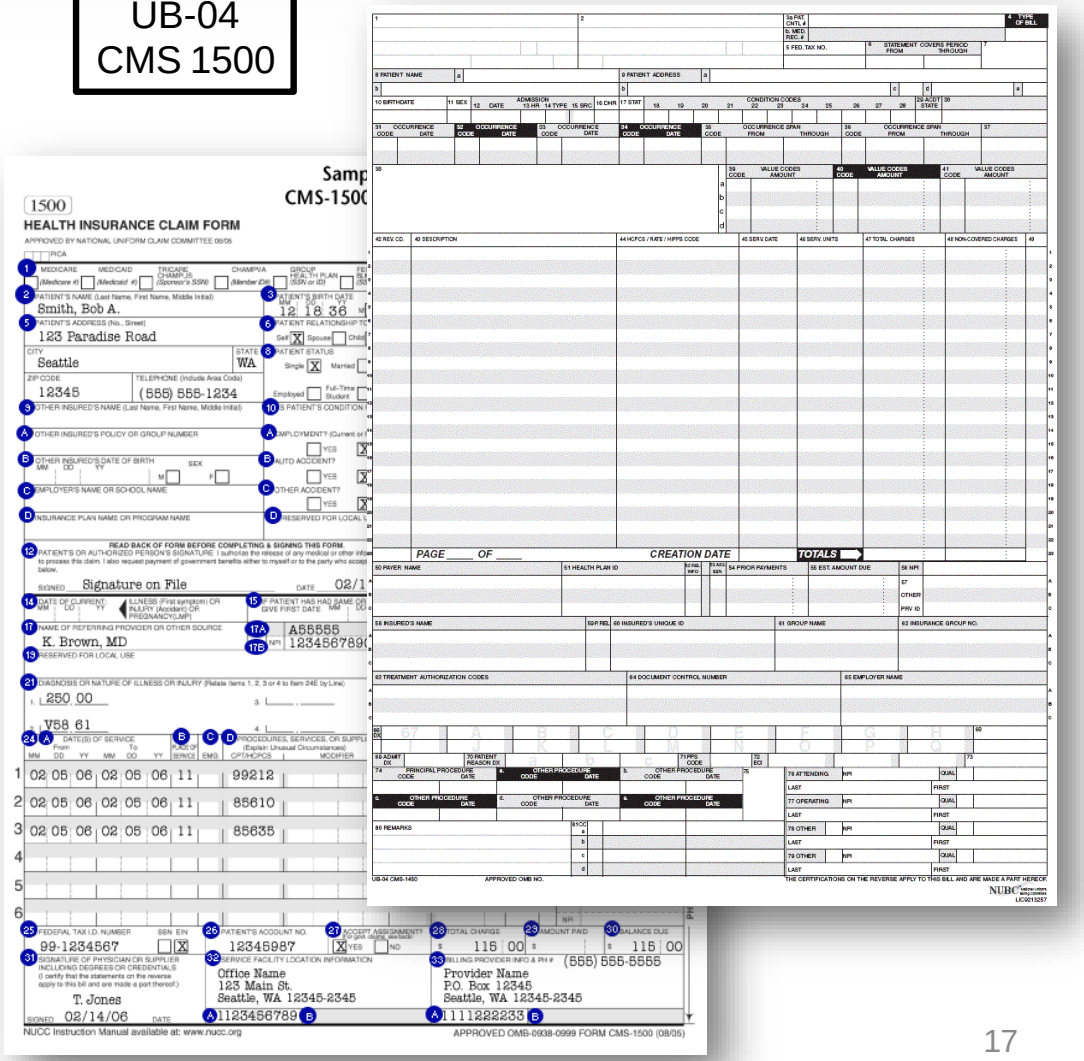
UB-04
CMS 1500

Demographic Data

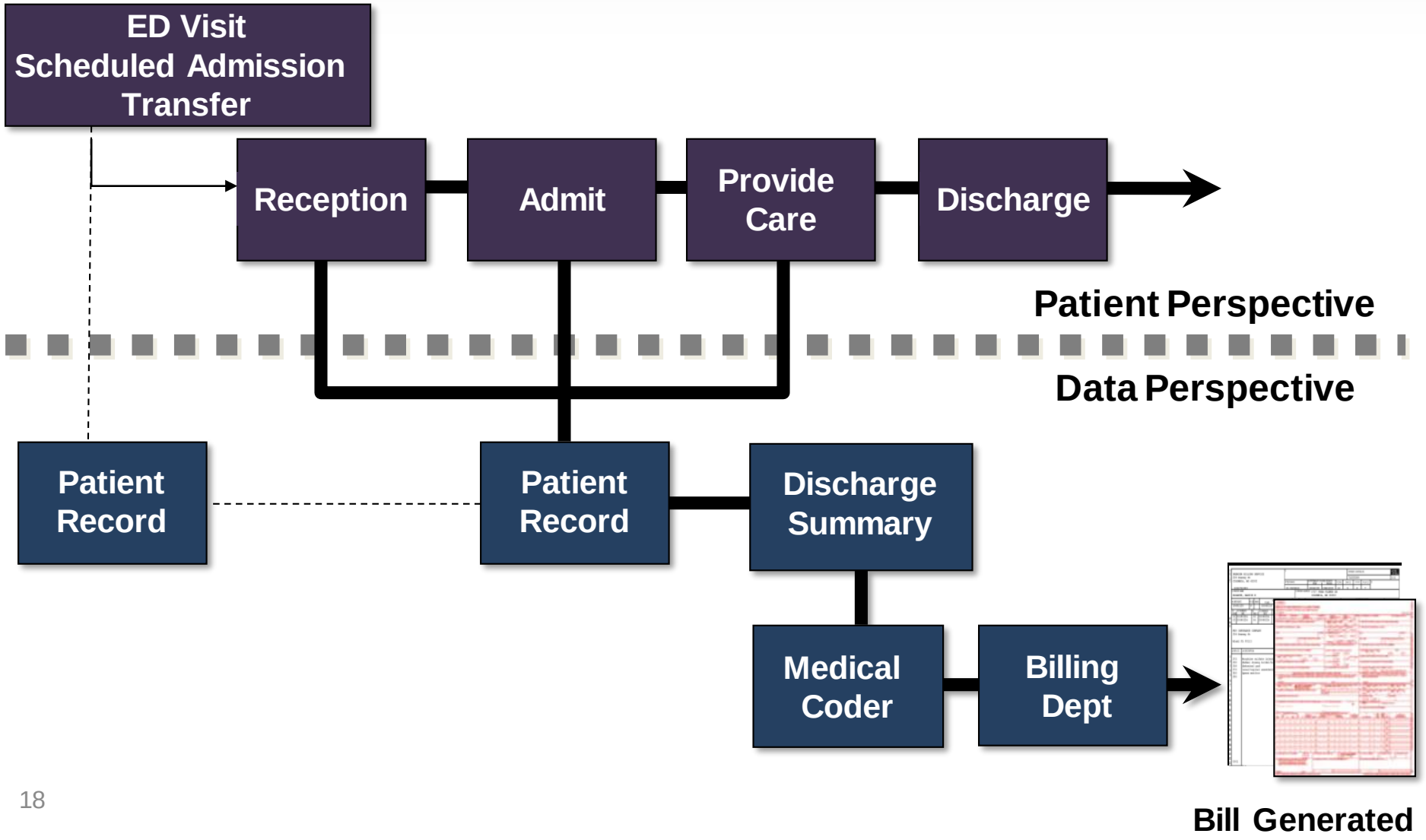
Diagnoses

Procedures

Charges



From Patient Hospital Visit to Administrative Record

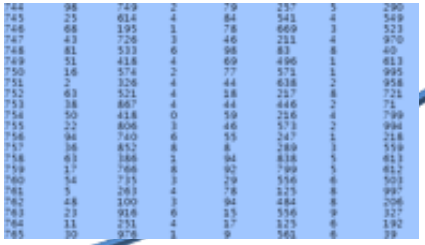


The Making of HCUP Data

Patient enters hospital

Billing record created

Hospital sends billing data and any additional data elements to data organizations



States store data in varying formats

AHRQ standardizes data to create uniform HCUP databases

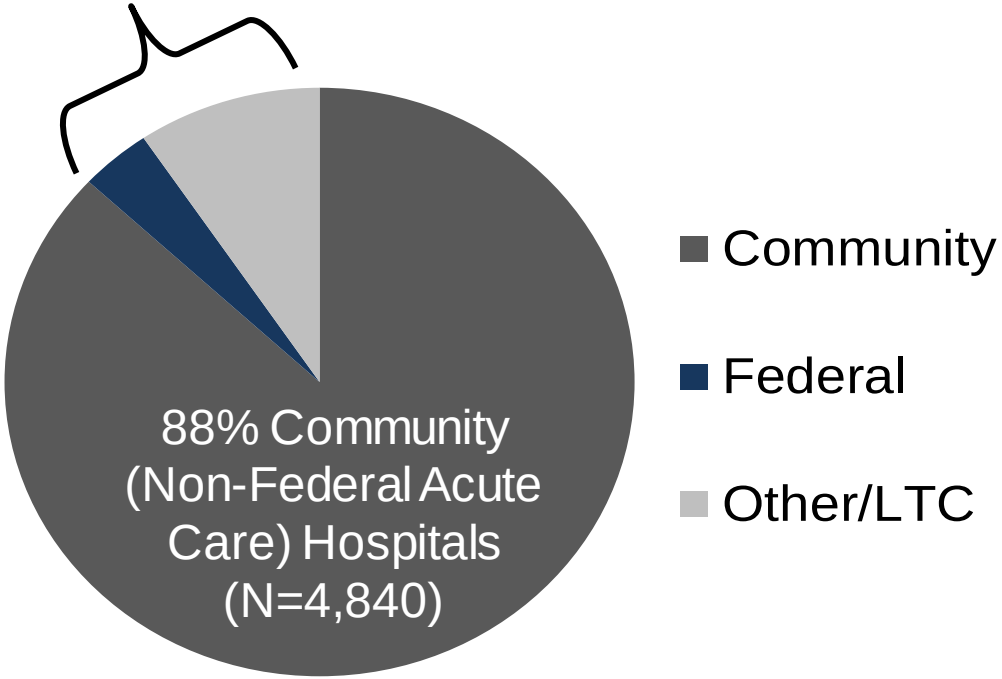
The HCUP Data Process

- State data are mapped to a standardized HCUP format which allows for consistent data elements and values for comparison across States
- Additional data elements are available:
  - Value-added variables – injury indicators, chronic condition indicators, procedure class
  - Hospital characteristics – teaching status, ownership/control, bed size
  - Diagnostic related groups and severity measures –
    - AHRQ's Clinical Classifications Software (CCS)
    - 3M's All Patient Refined DRGs (APR-DRGs)
- Quality checks are performed

Hospitals in the U.S.

- 88% of hospitals in the U.S. are Community Hospitals

  12% Non-Community Hospitals (Federal (DoD/VA/IHS), Non-Federal Psychiatric, Non-Federal Long Term Care, etc.)



Source: American Hospital Association (AHA) Annual Survey (FY 2016)
www.aha.org/statistics/fast-facts-us-hospitals

What Are Community Hospitals?

American Hospital Association Definition:

Non-Federal, short-term, general, and other specialty hospitals, excluding hospital units of other institutions (e.g., prisons)

Included	Excluded
Multi-specialty general hospitals	Long-term care
OB-GYN	Psychiatric
ENT	Alcoholism/Chemical dependency
Orthopedic	Rehabilitation
Pediatric	DoD / VA / IHS
Public	
Academic medical centers	

What Are Community Hospitals?

- HCUP generally does not receive data from non-community hospitals, such as Psychiatric facilities.
- However, if a patient is treated for a mental health condition in a community hospital, their information is included.

Most Frequent Principal Diagnosis	Rate of Discharges per 100,000 Persons
1. Liveborn	1,188.2
2. Septicemia (except in labor)	548.8
3. Osteoarthritis	337.2
4. Congestive Heart Failure; nonhypertensive	294.9
5. Pneumonia (except that caused by tuberculosis or sexually transmitted disease)	275.1
6. Mood disorders	266.2
7. Cardiac dysrhythmias	211.0

Source: HCUPnet, Weighted national estimates from the 2015 National Inpatient Sample

HCUP has Seven Types of Databases

- Three State-Specific Databases

State Inpatient Databases **(SID)**

State Ambulatory Surgery & Services Databases **(SASD)**

State Emergency Department Databases **(SEDD)**

- Four Nationwide Databases

National Inpatient Sample **(NIS)**

Kids' Inpatient Database **(KID)**

Nationwide Emergency Department Sample **(NEDS)**

Nationwide Readmissions Database **(NRD)**

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HCUP State Databases

State Inpatient Databases (SID)	All **inpatient U.S. community hospital discharge data** (including those admissions that started in the ED) from participating HCUP States
State Ambulatory Surgery & Services Databases (SASD)	**Ambulatory surgery data** (hospital-owned and some nonhospital-owned facilities) and other outpatient services from participating HCUP States
State Emergency Department Databases (SEDD)	**Emergency department data** (treat-and-release) from participating HCUP States

What Data Elements are Included in the HCUP Databases?

Data Elements:

- Patient demographics (e.g., age, sex, and, for some States, race)
- Diagnoses & procedures
- Expected payment source
- Length of stay
- Admission and discharge status
- Point of origin
- Total charges

Some Data Elements Vary by State

- Race/Ethnicity
- Patient county
- Patient ZIP Code
- Severity of illness
- Birthweight
- Procedure date (days from admission to procedure)
- Health plan details
- Additional expected payers
- Detailed charges
- Patient identifiers (encrypted)
- Physician identifiers (encrypted)
- Physician specialty
- Hospital identifier (unencrypted)

Example: Payer Detail Varies by State

PAY1_X		PAY1 (Standardized)	
Value	Description	Value	Description
010	Medicare	1	Medicare
011	Medicare (HMO)		
012	Medicare (Managed care - Other)		
013	Medicare (fee for service)		
020	Medi-Cal	2	Medicaid
021	Medi-Cal (HMO)		
022	Medi-Cal (Managed care - Other)		
023	Medi-Cal (fee for service)		
030	Private Coverage	3	Private insurance
031	Private Coverage (HMO)		
032	Private Coverage (Managed care - Other)		
033	Private Coverage (fee for service)		
08n, where n=0-3	Self-pay	4	Self-pay
--		5	No charge

Example: Race Detail Varies by State

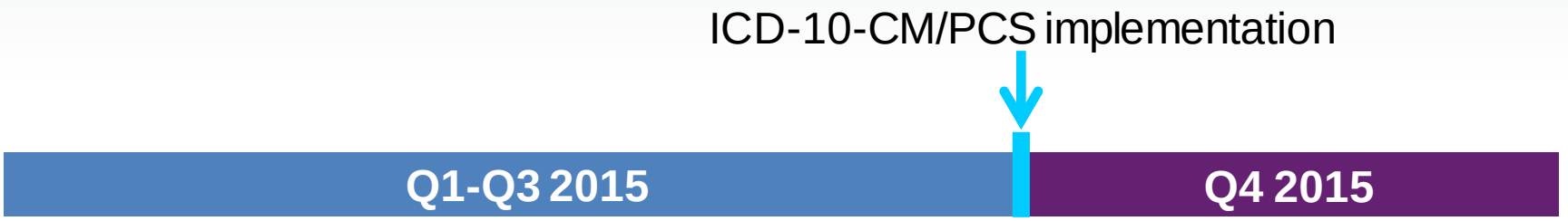
RACE_X		RACE (Standardized)	
Value	Description	Value	Description
1	White	1	White
2	Black	2	Black
3	Hispanic	3	Hispanic
4	Hawaiian	4	Asian or Pacific Islander
5	Chinese		
6	Filipino		
7	Japanese		
8	Other Asian		
9	Other Pacific Islander		
10	Native American	5	Native American
11	Mixed or Other	6	Other

HCUP Files vs. Partner Files

- HCUP State Files vs. Data Files received directly from the State Partners

HCUP State Files	HCUP Partner-Provided Files
Subset of data elements	All data elements
Value-added data elements available	May not have same value-added elements available
Uniformly coded across the States	Not uniformly coded across states
Standard data quality checks	Variability in quality checks by state
Lag time	More timely

2015 State and Nationwide Databases: Revised Structure



- Q1 to Q3 contain ICD-9-CM Codes
- Q4 contain ICD-10-CM/PCS codes

- File structure changed in 2015 to separate Q1-Q3 and Q4 data
  - **State databases:** all file types have records split into Q1-Q3 and Q4 files
  - **Nationwide databases:** only file types containing DX/PR related variables are split into Q1-Q3 and Q4 files
- AHRQ-created resources help users with transition:
  - 2015 HCUP State Databases: Change in Structure and Data Elements Caused by Transition to ICD-10-CM/PCS (PDF)
  - 2015 HCUP Nationwide Databases: Change in Structure in Data Elements (PDFs specific to NIS, NEDS, and NRD)
  - Data Innovations – ICD-10-CM/PCS Resources page: www.hcup-us.ahrq.gov/datainnovations/icd10_resources.jsp

Partners Releasing Databases through HCUP Central Distributor

- Arizona
- Arkansas
- California
- Colorado
- District of Columbia
- Florida
- Georgia
- Hawaii
- Iowa
- Kansas
- Kentucky
- Maine
- Maryland
- Massachusetts
- Michigan
- Minnesota
- Mississippi
- Nebraska
- Nevada
- New Jersey
- New Mexico
- New York
- North Carolina
- Oregon
- Rhode Island
- South Carolina
- South Dakota
- Utah
- Vermont
- Washington
- West Virginia
- Wisconsin

Remember:

Not all States participate in all years and for all databases

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HCUP Nationwide Databases

National (Nationwide) Inpatient Sample (NIS)	Inpatient discharge data for a **sample of discharges from all hospitals** in SID
Kids' Inpatient Database (KID)	Pediatric inpatient hospital discharge data from a **sample of pediatric discharges** in SID
Nationwide Emergency Department Sample (NEDS)	Emergency department data (treat and release & admitted) from a **sample of hospitals** in SID and SEDD
Nationwide Readmissions Database (NRD)	Inpatient discharge data from **all hospitals for SID with verified patient linkage numbers**

Many Potential Applications of HCUP National Databases

- National and regional estimates
- Utilization, charges, and outcomes
- Utilization of health services by priority populations
- Hospital care for rare conditions
- Quality of care and patient safety
- Impact of health policy changes
- Access to care

Comparison of the HCUP Inpatient Databases

	HCUP Inpatient Databases			
HCUP Database	**SID (2015)**	**NIS (2015)**	**KID (2012)**	**NRD (2015)**
States	46 States + DC	46 States + DC	44	27
Hospitals	4,600	4,500	4,200	2,300
Inpatient discharges	34 million	7 million	3 million	17 million
Derived From	--	SID	SID	SID
Uses	Examine **State and local market area** statistics on health care utilization, access, quality, patient safety, etc. Readmission analyses possible in some States.	Generate **national and regional** estimates of health care utilization, access, quality, patient safety, etc.	Generate **national and regional pediatric** estimates of health care statistics.	Generate **national estimates** of all-cause and condition-specific **readmissions.**

State and Nationwide Database Size – Outpatient Data

	Emergency Department Data		Ambulatory Surgery and Services Data
HCUP Database	**SEDD (2015)**	**NEDS (2015)**	**SASD (2015)**
Hospitals	3,300	953	3,600
Records	93 million	31 million	17 million surgeries; 86 million other outpatient services
Derived From	–	SID & SEDD	–
Includes	All ED visits in a given State that do not result in an admission	Sample of hospital-based EDs with ED admissions and ED outpatient visits	Encounter-level data for ambulatory surgeries and other outpatient services from hospital-owned facilities

NIS is a Stratified Sample of Discharges from the SID

State Inpatient Databases (SID)

~ 5,500 hospitals
~ 34 M records

Strata

- Ownership/Control
- Bed Size
- Teaching Status
- Urban/Rural Location
- U.S. Census Division

Stratified Sample of Discharges

*State not included in the stratum

Within strata sort by hospital, DRG, and admission month and select 1 in 5 records

National Inpatient Sample (NIS)

~ 4,500 hospitals
~ 7 M records

Statistics listed from 2015 data year

Comparing SID with NIS

	SID	NIS
Linkage to AHA Annual Survey Data	Yes, for some States	Only 2011 and prior years
Revisit analyses	Yes, for some States	Not applicable
Uniformity of coding	State-specific data elements and detailed coding	Common data elements and HCUP uniform coding
Level of analysis available	State, local market area, and community statistics	Generate national and regional estimates

KID is a Stratified Sample of Discharges from the SID

State Inpatient Databases (SID)

~ 4,380 hospitals
~ 34.3M records

Strata

- Uncomplicated Births
- Complicated Births
- Pediatric Non-Births

Stratified Sample of Discharges

*State not included in the stratum

- 10% uncomplicated births
- 80% pediatric discharges

Kids' Inpatient Database (KID)

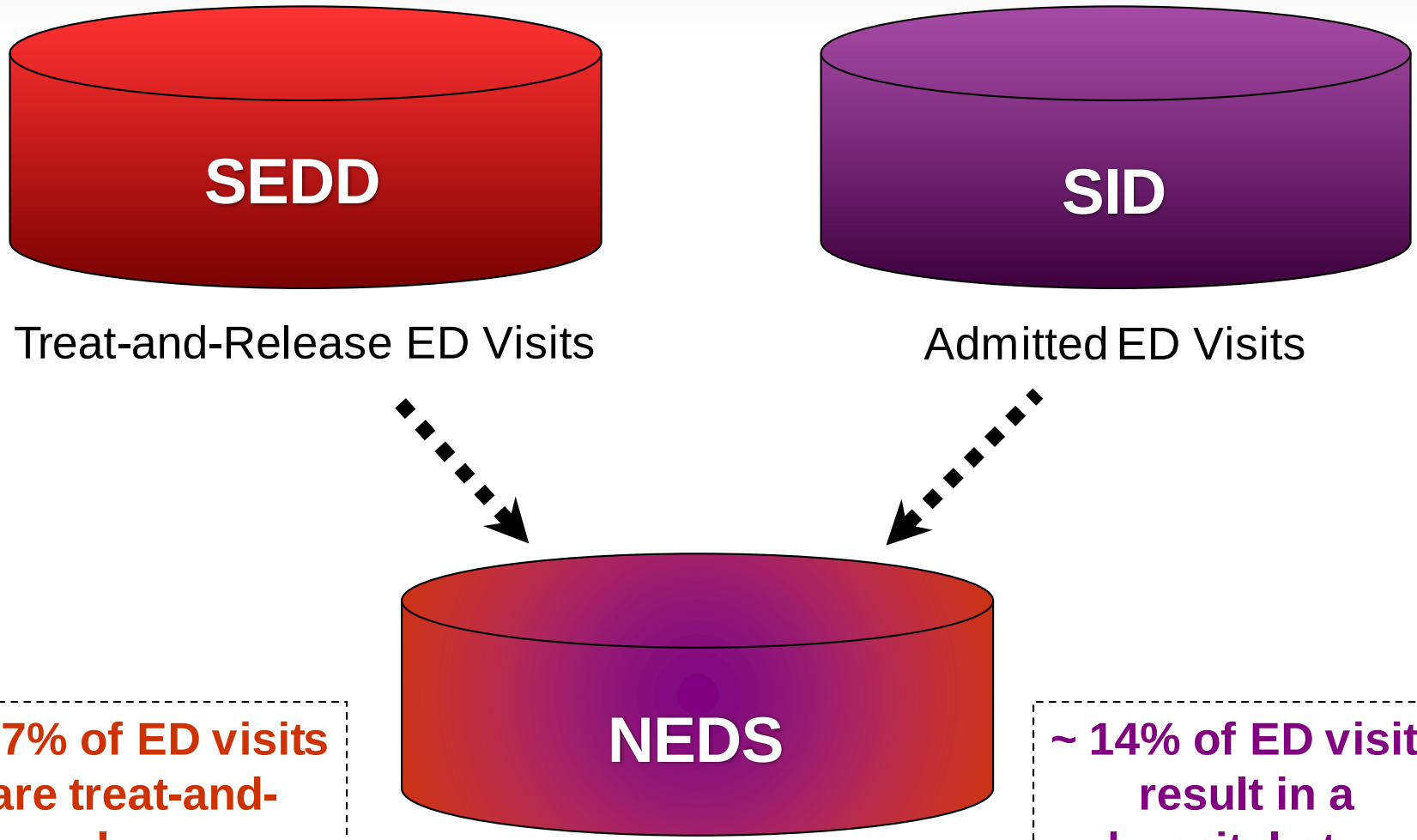
~ 4,000 hospitals
~ 3M records

Statistics listed from 2012 data year

KID Planned for Release Using 2016 Data

- Historically, the KID has been produced every three years beginning in 1997 and currently through 2012.
- Given that hospital discharge data for 2015 contains a mix of ICD-9-CM and ICD-10-CM/PCS data, the next KID will be available for the 2016 data year and will be comprised of ICD-10-CM/PCS data only.
- This decision was made due to the complexities of analyzing a mixed coded data year.

HCUP NEDS Data



Statistics listed from 2015 data year

NEDS is a Stratified Sample of Hospitals from the SEDD and SID

State Inpatient Databases (SID)

State Emergency Department Databases (SEDD)

Strata

- U.S. Region
- Urban/Rural Location
- Teaching Status
- Ownership/Control
- Trauma center

Stratified Sample of Hospitals

*State not included in the stratum

Nationwide Emergency Department Sample (NEDS)

~ 950 hospitals

~ 31M ED visits

Statistics listed from 2015 data year

NRD is Constructed from SID with Verified Patient Linkage Numbers

State Inpatient Databases (SID)

Hospital and Patient Exclusions

Strata

- U.S. Region
- Urban/Rural Location
- Teaching Status
- Size
- Ownership/Control
- Patient Characteristics (age and sex)

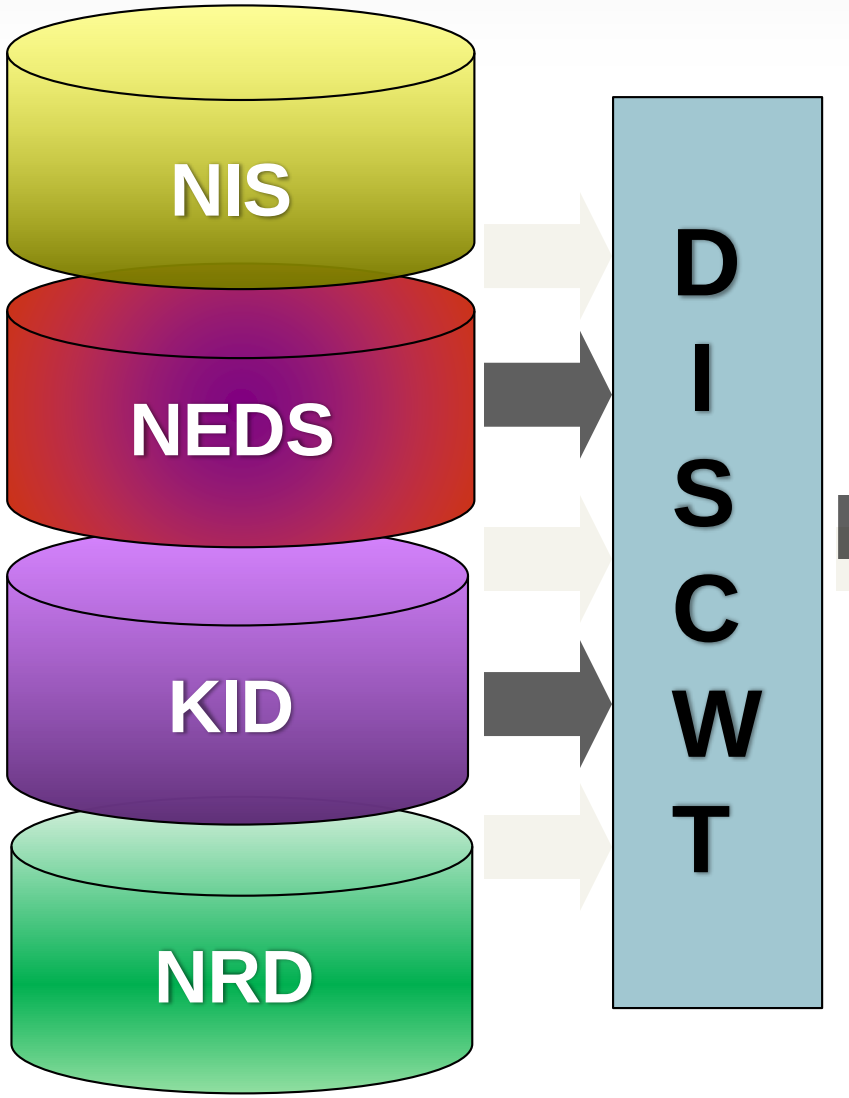
All Discharges (after exclusions)

Nationwide Readmissions Database (NRD)

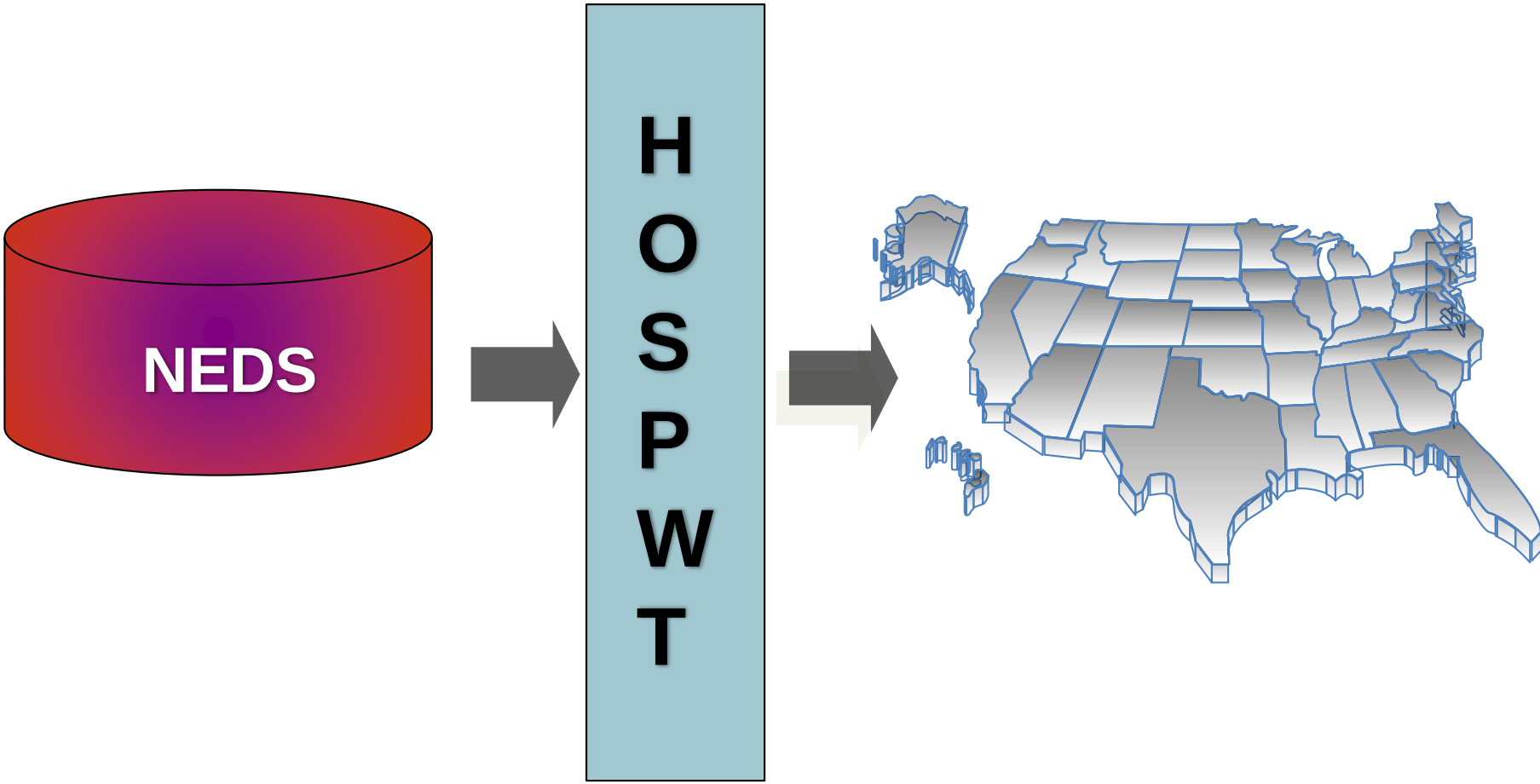
~ 2K hospitals
~ 17M records

Statistics listed from 2015 data year

NIS, NEDS, KID, NRD: Must be Weighted to Produce National and Regional Estimates



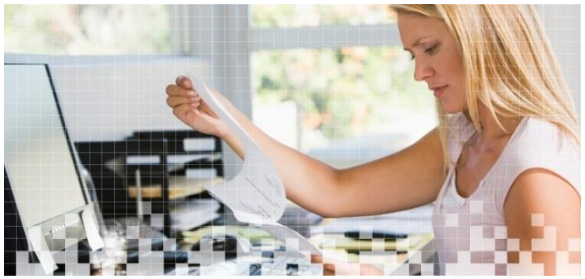
NEDS: Must be Weighted to Produce National and Regional Estimates



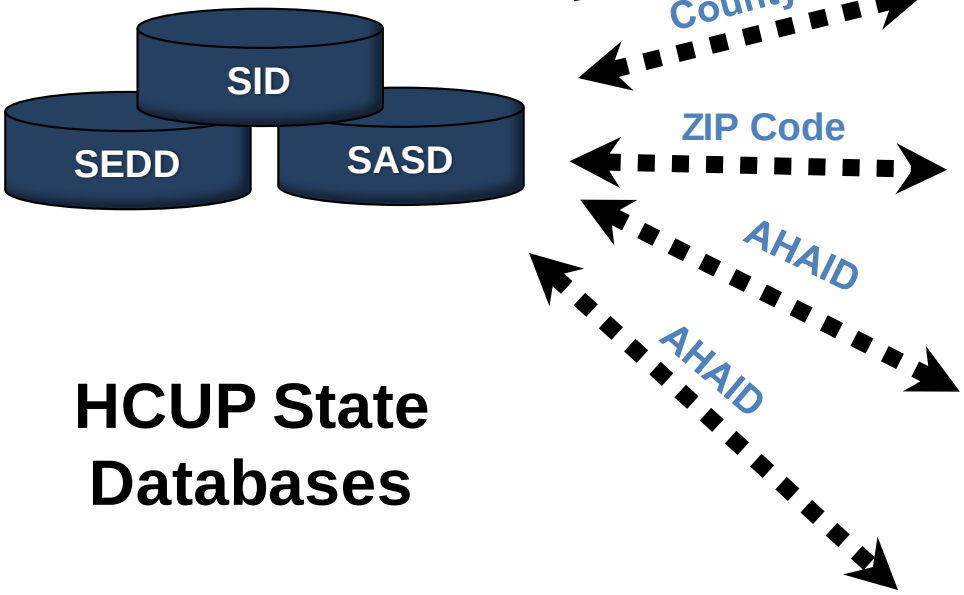
What Types of Care Are and Are Not Captured by HCUP?

Included in HCUP	
Inpatient Care	State Inpatient Databases (SID) National (Nationwide) Inpatient Sample (NIS) Kids' Inpatient Database (KID) Nationwide Readmissions Database (NRD)
Emergency Department	State Emergency Department Databases (SEDD) Nationwide Emergency Department Sample (NEDS)
Ambulatory Surgery & Services	State Ambulatory Surgery & Services Databases (SASD)
Other Non-Emergent Outpatient Services	State Ambulatory Surgery & Services Databases (SASD)

Not Included in HCUP
Physician office visits
Pharmacy
Labs/Radiology



Some Limitations Can be Addressed by Linking to Other Databases



HCUP State Databases

- American Hospital Association (AHA) Annual Survey
- Health Resources and Services Administration's (HRSA) Area Health Resource File (AHRF)
- Zip Code Files from Census or Vendor
- Medicare Cost Reports
- Trauma Information Exchange Program (TIEP)

HCUP Key Design Features

HCUP is…	HCUP is NOT…
A family of discharge databases for health care encounters	A survey
All payer, including the uninsured	Specific to a single payer, e.g. Medicare
Hospital, ambulatory surgery and services, emergency department data	Office visits, pharmacy, laboratory, radiology
All hospital discharges	Hospital claims
Accessible multiple ways: raw data, regular reports, online	Only a database – it includes additional tools and resources

Hospital Billing Data Have Benefits and Limitations

Benefits
Large number of records
Uniformity in coding
Regular, routine collection
Ease of access
All payers, including the uninsured
Available at local, state, regional, and national level
Supplemental files available to facilitate research

Limitations
Limited clinical details
Lack reimbursed claims information
Does not include all hospital types (e.g., VA and DoD)
Does not show complete episode of care
No data on individuals outside of the hospital system
Cannot link national databases to external sources
Differences in coding across hospitals

Summary

- Seven types of HCUP databases
- Databases are based on administrative hospital data: inpatient, emergency department, and ambulatory surgery and services
- Available for multiple years
  - Nationwide
    - NIS (1988-2015)
    - NEDS (2006-2015)
    - KID (1997, 2000, 2003, 2006, 2009, 2012)
    - NRD (2010-2015)
  - State
    - SID (1990-2016)
    - SASD (1997-2016)
    - SEDD (1999-2016)
- Can look at breadth of health care issues
- Can be linked to external files

Find out more on HCUP-US!

www.hcup-us.ahrq.gov/

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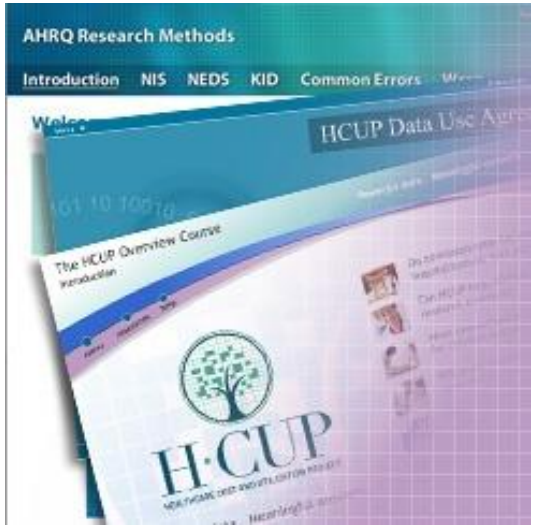
The HCUP Database Process

- Processed data sent to HCUP Partners
- State Databases become available to public through the HCUP Central Distributor
- Nationwide Databases become available for download through the HCUP Central Distributor



How to Purchase HCUP Data

HCUP Central Distributor

www.hcup-us.ahrq.gov/tech_assist/centdist.jsp

- Visit the HCUP Central Distributor.
- The Central Distributor provides one stop shopping for purchasing many of the State Databases, as well as the Nationwide Databases.
- Not all data elements are available from every Partner Organization, and not all Partner Organizations make their data available through the Central Distributor.
- Some Partner Organizations may place additional restrictions on the sale of their data.

Purchase Data Online Through the HCUP Central Distributor

Step 1: Take Data Use Agreement (DUA) online training:
www.hcup-us.ahrq.gov/tech_assist/dua.jsp

Step 2: Login or register for an account:
www.hcup-us.ahrq.gov/tech_assist/centdist.jsp

Step 3: Create your profile under "My Account"

Step 4: Submit online order and complete further instructions listed on the "Thank You" page

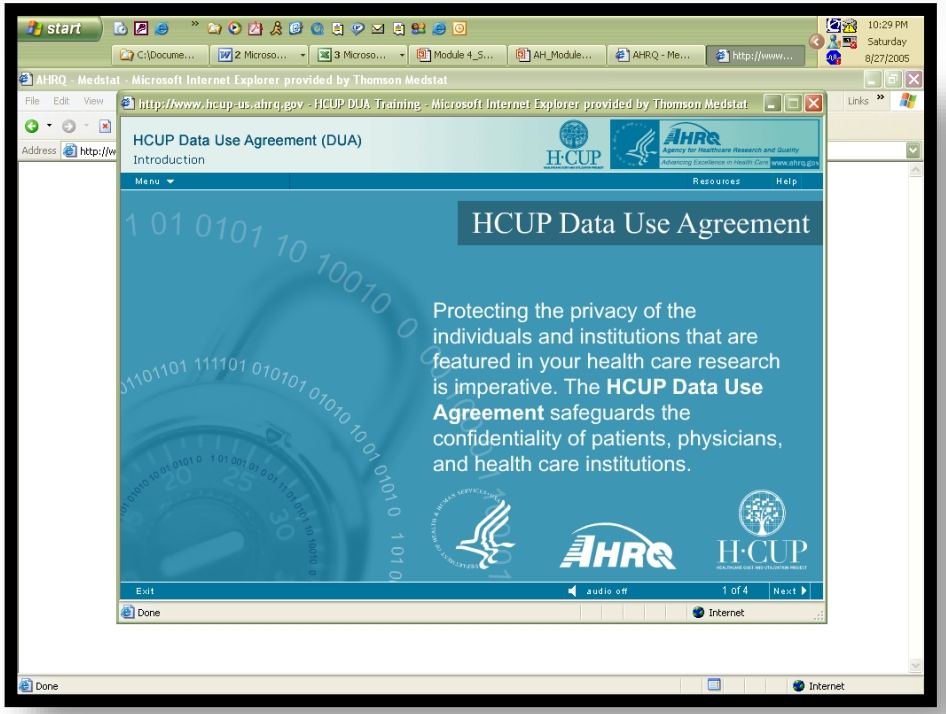
Step 5: Download Nationwide Databases online or receive delivery of State Databases through the mail.

For assistance, contact the HCUP Central Distributor:

- Phone: 866-556-HCUP (4287) toll free
- Email: HCUPDistributor@ahrq.gov

Additional Requirement: Electronic Data Use Agreement (DUA) Course

- **Purpose of the Course:**
  - **Emphasize the importance of data protection**
  - **Reduce the risk of inadvertent violations**
  - **Describe your individual responsibility when using HCUP data**



Takes 15 minutes to Complete

www.hcup-us.ahrq.gov/tech_assist/dua.jsp

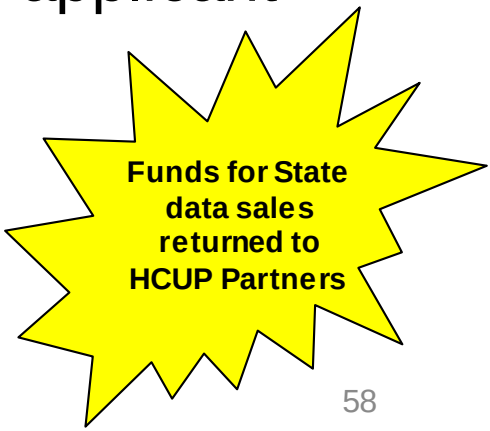
Pricing Information Per Data Year

Nationwide Databases (NIS, KID, NEDS, NRD)

- **NIS**: $625 beginning 2016, student price $125
- **KID**: $350 beginning 2009, student price $50
- **NEDS**: $750 beginning 2014, student price $150
- **NRD**: $1,000 beginning 2015, student price $200

State Databases (SID, SASD, SEDD)

- Varies by state, database, year, and type of applicant
- $50 - $3,200



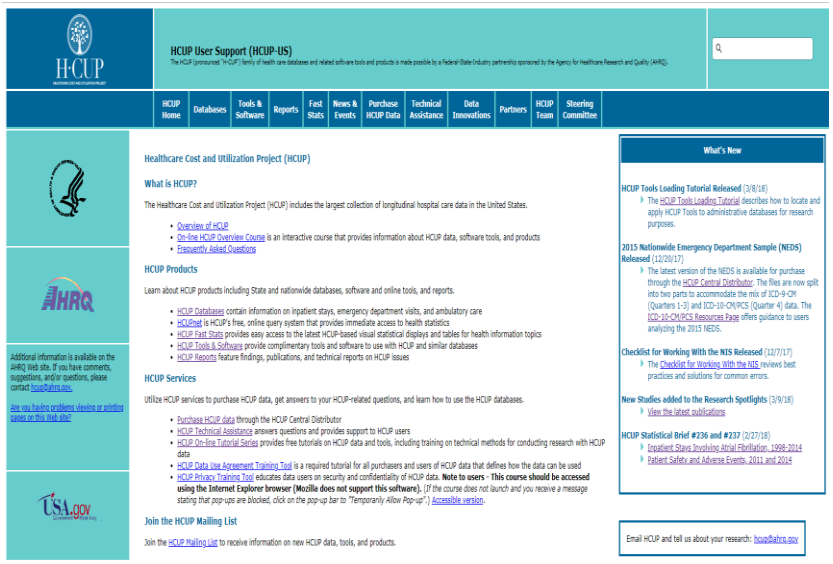
Software Requirements of Working with the Full HCUP Files

Software Package	Load Programs	Format Programs	Example Statistical Coding	HCUP Tools Programs
SAS	X	X	X	X
STATA	X		X	X
SPSS	X			X
SUDAAN			X	

MS Excel and Access are NOT GOOD Options!

HCUP User Support Web Site

- Find detailed information on HCUP databases, tools, and products
- Access HCUPnet, HCUP Fast Stats, the Central Distributor, Online Tutorials, and more
- Find comprehensive list of HCUP-related publications and database reports
- Access technical assistance



Visit us at

www.hcup-us.ahrq.gov

HCUP-US for Database Documentation

Nationwide HCUP Databases

HCUP's National (Nationwide) databases can be used to identify, track, and analyze national trends in health care utilization, access, charges, quality, and outcomes.

National (Nationwide) Inpatient Sample (NIS)

- NIS Database Documentation

Kids' Inpatient Database (KID)

- KID Database Documentation

Nationwide Emergency Department Sample (NEDS)

- NEDS Database Documentation

Nationwide Readmissions Database (NRD)

- NRD Database Documentation

State-Specific HCUP Databases

HCUP's State-specific databases can be used to investigate State-specific and multi-State trends in health care utilization, access, charges, quality, and outcomes.

State Inpatient Databases (SID)

- SID Database Documentation

State Ambulatory Surgery and Services Databases (SASD)

- SASD Database Documentation

State Emergency Department Databases (SEDD)

- SEDD Database Documentation

www.hcup-us.ahrq.gov/databases.jsp

Presentation Objectives Part II

- Tools & Software
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Value-Added Clinical and Quality Measurement Tools

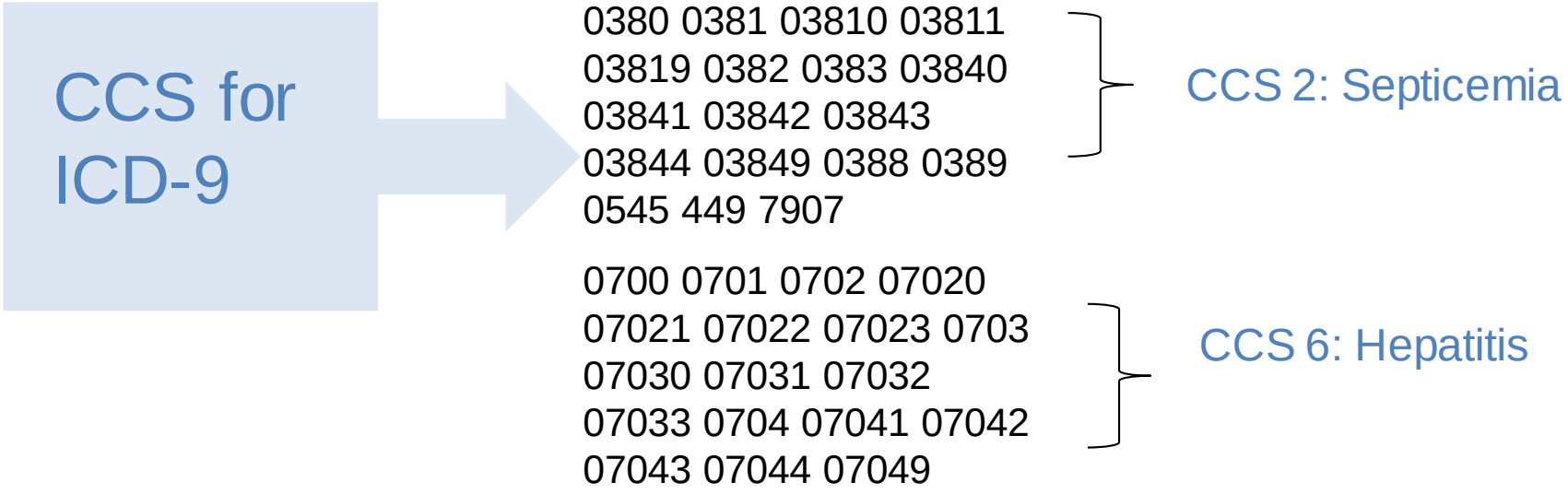
- Clinical Classifications Software (CCS)*^
- Procedure Classes*^
- Chronic Condition Indicator*^
- Elixhauser Comorbidity Software*^
- Utilization Flags*^
- Surgery Flags*
- AHRQ Quality Indicators^
  - Prevention Quality Indicators
  - Inpatient Quality Indicators
  - Patient Safety Indicators
  - Pediatric Quality Indicators

*Available on most HCUP databases through September 30, 2015

^Available for ICD-9-CM and ICD-10-CM/PCS

Clinical Classifications Software (CCS) for ICD-9-CM

- Clusters diagnosis and procedure codes into categories
  - >14,000 diagnoses codes → 285 categories
  - > 3,900 procedure codes → 231 categories
- Useful for presenting descriptive statistics and understanding patterns



Clinical Classifications Software (CCS) Versions

- **CCS for ICD-9-CM**
  - Single-level & Multi-level
  - Valid through FY 2015
- **Beta CCS for ICD-10-CM/PCS**
  - Single-level & first and second multi-level categories only
  - Valid through FY 2018
- **CCS for Mortality Reporting**
  - Codes are valid through December 2009
- **CCS for Services and Procedures**
  - Classifies CPT/HCPCS codes
  - Valid through December 2018

Procedure Classes

- Groups procedure codes into one of four categories
  - Beta Procedure Classes for ICD-10-PCS
    - Valid through FY 2018
    - More than 71,900 procedure codes!
  - Procedure Classes for ICD-9-CM
    - Valid through FY 2015
    - Approximately 4,000 procedure codes
- Major procedures defined as OR procedures (DRGs)

ICD-10-PCS
or
ICD-9-CM
Procedure
Codes

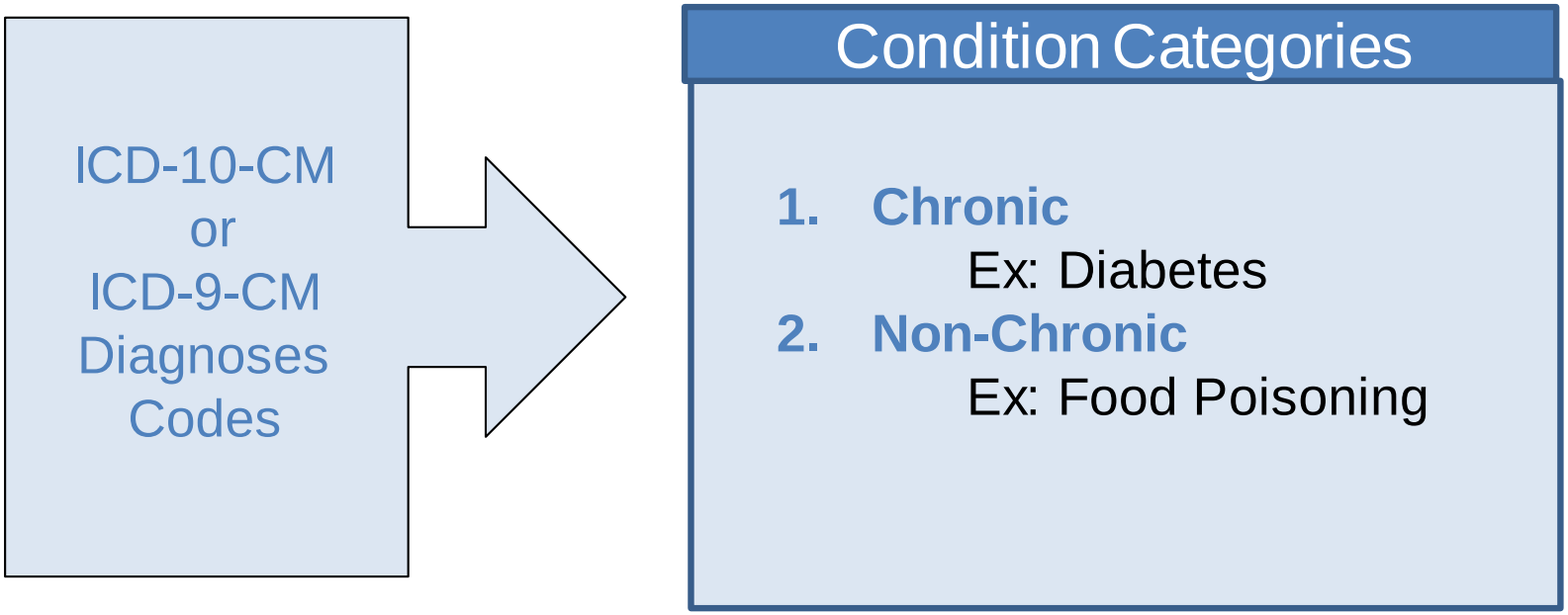
Procedure Categories

1. **Minor Diagnostic**
   Ex: Electrocardiogram
2. **Minor Therapeutic**
   Ex: Pacemaker
3. **Major Diagnostic**
   Ex: Pericardial Biopsy
4. **Major Therapeutic**
   Ex: CABG

Chronic Condition Indicator (CCI)

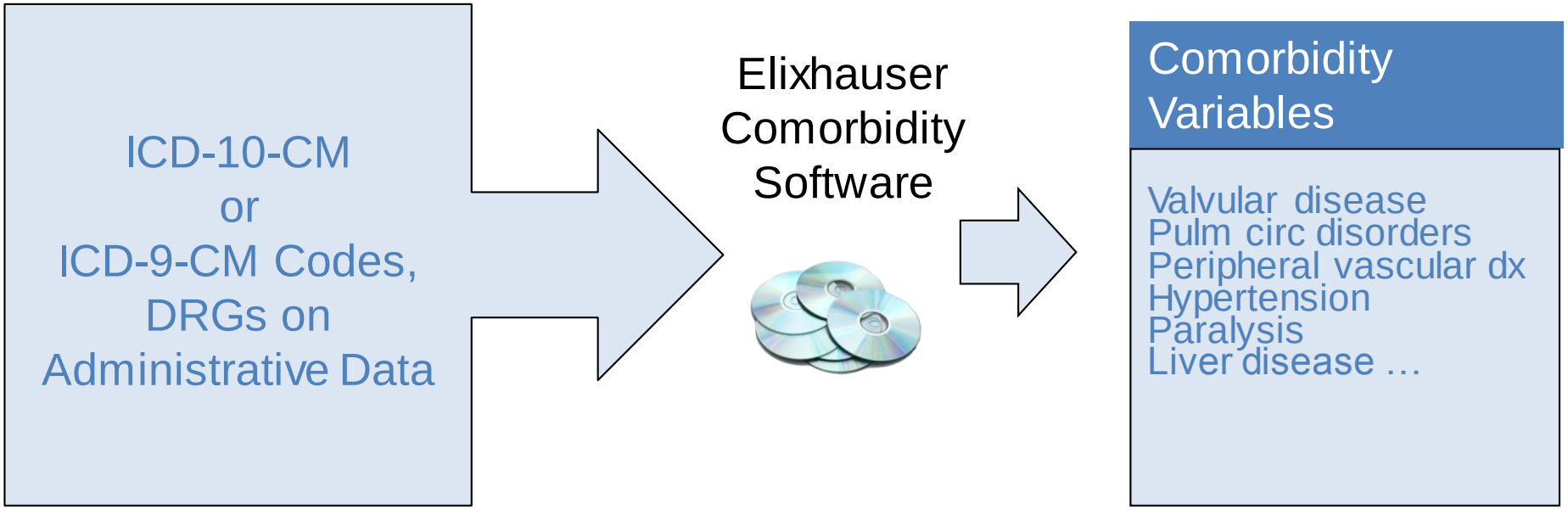
Group diagnosis codes into Chronic or Non-Chronic Categories

- Beta CCI for ICD-10-CM diagnoses codes valid through FY 2018
- CCI for ICD-9-CM diagnoses codes valid through FY 2015



Elixhauser Comorbidity Software

- Creates indicator flags for 29 major comorbidities
  - Elixhauser Comorbidity Software Version 3.7 for ICD-9-CM diagnoses codes valid through FY 2015
  - Beta Elixhauser Comorbidity Software Version 2018.1 for ICD-10-CM diagnoses codes valid through FY 2018



Index for Elixhauser Comorbidity Software

- Two indices based on Elixhauser Comorbidity Software now available on HCUP-US
  - Applies weights to inpatient records and creates the two indices for the software –
    - » One for **In-hospital mortality** and
    - » One for **Readmission**
  - The resulting index score(s) can be used in analyses in place of the 29 individual measures.
- Elixhauser Comorbidity Version 3.7 is available for ICD-9-CM data only

Utilization Flags

- Reveals additional information about the use of health care services
- Primarily uses UB-04 revenue codes, augmented with ICD-9-CM and ICD-10-PCS procedure codes
- Two versions available:
  - Utilization Flags for ICD-9-CM valid through December 2014
  - Utilization Flags for ICD-10-PCS valid through FY 2018

UB-04 codes
+
ICD-9-CM &
ICD-10-PCS
procedure codes

Utilization Flag Software

Utilization Flags

- Emergency Room
- Observation Services
- Intensive Care Unit
- Renal Dialysis
- CT Scan…

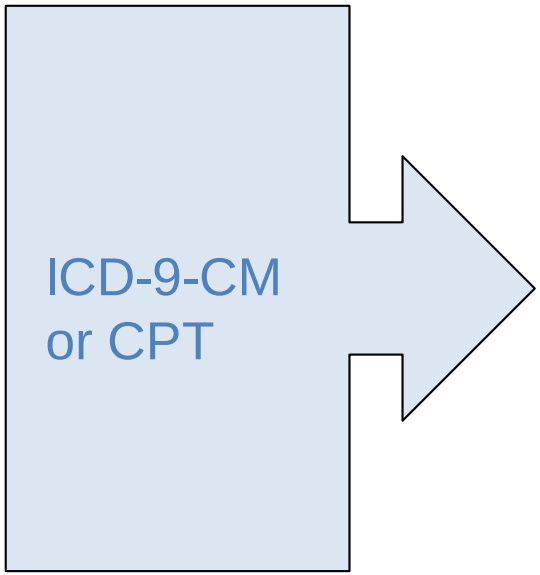
30 Utilization Flags

Utilization Flags	
Accommodation	
Intensive Care Unit (ICU)	Coronary Care Unit (CCU)
Newborn Level II	Newborn Level III
Newborn Level IV	
Cardiac Services	
Cardiac Catheterization Lab	Cardiac Stress Test
Echocardiogram	Electrocardiogram (EKG)
Imaging and Diagnostic Tests	
Computed Tomography (CT) Scan	Chest X-Ray
Electroencephalogram (EEG)	Ultrasound
Magnetic Resonance Technology (MRT)	Nuclear Medicine
Devices	
Pacemaker	Other Implants
Therapeutic Services	
Lithotripsy	Occupational Therapy
Physical Therapy	Respiratory Therapy
Therapeutic Radiology and Chemotherapy	Renal Dialysis
Speech-Language Pathology	Erythropoietin (EPO)
Mental Health and Substance Abuse	Blood

There are not ICD-9-CM codes and ICD-10 PCS codes for all services. Concern exists that some diagnostic procedures may be under-reported.

Surgery Flags

- Identifies encounters for surgical procedures in ICD-9-CM or CPT-based inpatient and ambulatory surgery data
- Valid for codes through December 2015



1. Narrow

- Invasive therapeutic surgical procedure involving incision, excision, manipulation, or suturing of tissue that penetrates or breaks the skin
- Typically requires use of an operating room
- Requires regional anesthesia, general anesthesia, or sedation to control pain

2. Broad

- Includes all narrowly defined surgical procedures as well as a broader group of diagnostic and less invasive therapeutic surgeries

3. Neither Broad nor Narrow

- Ex: Use of endoscopes for diagnostic purposes only and for which nothing was removed

Use of HCUP Tools with ICD-10-CM/PCS Data

- Users are advised to visit the HCUP-US Tools & Software page regularly to ensure they have the most recent version of the HCUP tools downloaded and applied to their data.

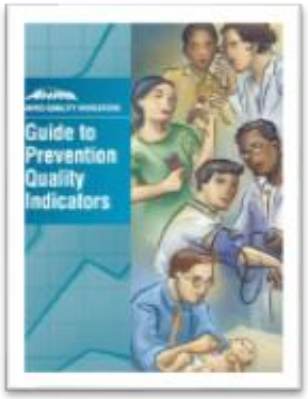
  www.hcup-us.ahrq.gov/tools_software.jsp

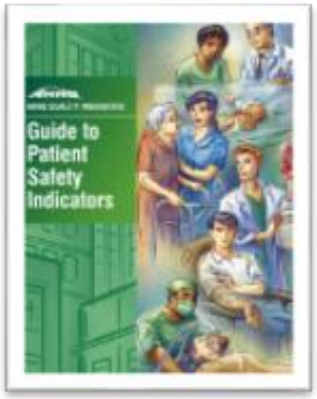
- For the 2015 HCUP State Databases, users should use caution with the tools-based data elements present on the Q4 data.

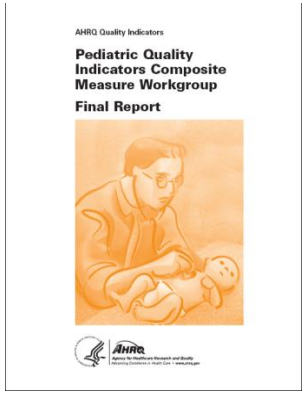
- A new HCUP Tools Loading Tutorial is available to assist users in the download and use of HCUP Tools.

AHRQ Quality Indicators

- Create measures of health care quality using inpatient administrative data
  - 4 Quality Indicator modules:
    1. Prevention Quality Indicators (PQIs)
    2. Inpatient Quality Indicators (IQIs)
    3. Patient Safety Indicators (PSIs)
    4. Pediatric Indicators (PDIs)







Presentation Objectives Part II

- Tools & Software
- Supplemental Files
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- How to Access HCUP Resources

HCUP Supplemental Files Can Only be Applied to HCUP Databases

- Cost-to-Charge Ratio (CCR) Files
- Hospital Market Structure (HMS) Files
- Supplemental Variables for Revisit Analyses
- Trend Weights Files (NIS & KID)
- American Hospital Association (AHA) Linkage Files

Charges vs. Costs

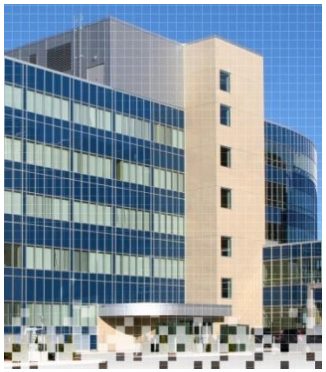
- **Charges:** What the hospital charged for care (includes charge BEFORE discount)

- **Costs:** What it cost the hospital to provide the care

HCUP Databases include **CHARGE** information. **COST** information can be estimated by applying the cost-to-charge ratio supplemental file to the data of select databases

Cost-to-Charge Ratio (CCR) Files

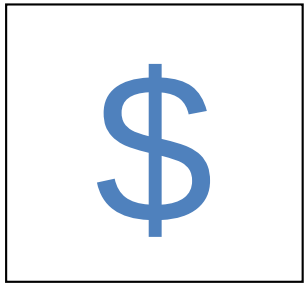
- Enable conversion of charge data to cost data on the SID, NIS, KID, and NRD



Hospital-Level Data

	A	B	C
1	HOSPID	APICC	GAPICC
2	xxxx	xxxx	xxxx
3	xxxx	xxxx	xxxx
4	xxxx	xxxx	xxxx
5	xxxx	xxxx	xxxx
6	xxxx	xxxx	xxxx
7	xxxx	xxxx	xxxx

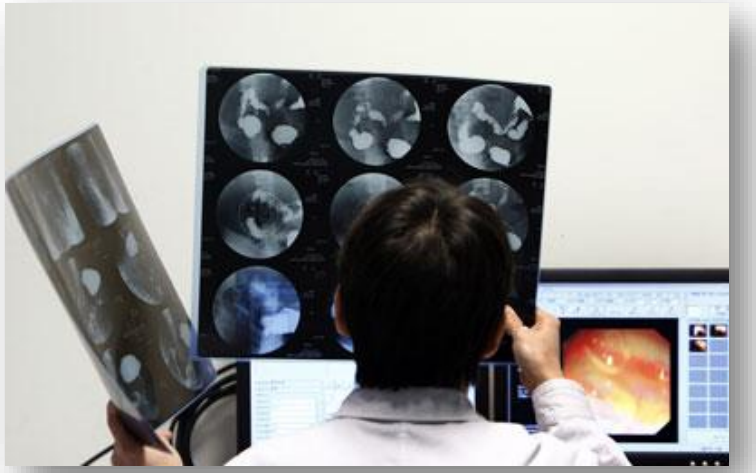
Apply Ratios



Convert Total Charges to Costs

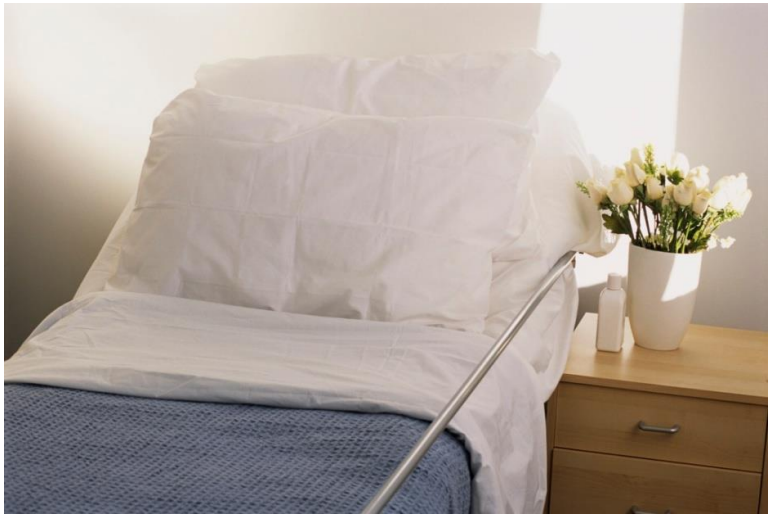
Hospital Market Structure (HMS) Files

- Contain various measures of hospital market competition
- Allow users to broadly characterize the intensity of competition that hospitals face
  - Using various definitions of market area



HCUP Supplemental Variables for Revisit Analyses

- Allows linkage across settings and time
  - Hospital readmissions
  - ED visits following hospital discharge
  - Inpatient hospitalizations following ambulatory surgery visits
- Adheres to strict privacy guidelines



HCUP Supplemental Variables for Revisit Analyses

- There are two HCUP supplemental variables:
  1. Synthetic person-level identifier (VisitLink)
     - Verified against the patient's date of birth and sex
     - Examined for completeness
  2. Timing variable determines the number of days between events for an individual (DaysToEvent)
     - Without the use of actual dates
- HCUP revisit variables are to be used exclusively with the SID, SASD, and SEDD (not Nationwide Databases) for States with encrypted patient identifiers
- Revisit Variables are only available in one nationwide HCUP database – the Nationwide Readmissions Database (NRD) (NRD_VisitLink and NRD_DaysToEvent)
- Select national revisit statistics are also available on HCUPnet

Additional HCUP Supplemental Files

- **Trend Weights Files (NIS & KID)**
  - Discharge-level files that provide trend weights and data elements that are consistently defined across data years
- **AHA Linkage Files**
  - Enable researchers to link hospital identifiers in some State Databases to the AHA Annual Survey Databases

www.hcup-us.ahrq.gov/tools_software.jsp

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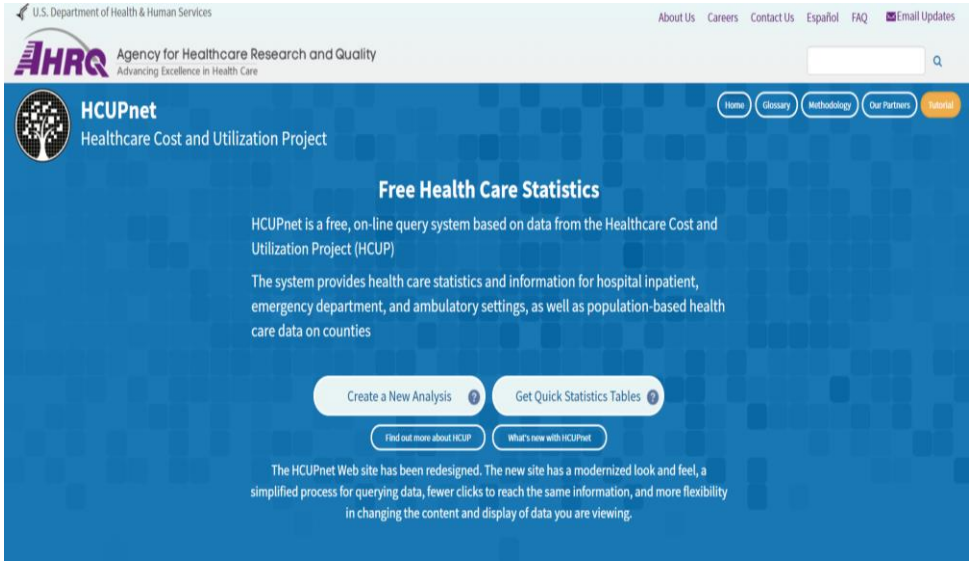
HCUPnet: Quick, Free Access to HCUP Data

- Free online query system
- Users generate tables and figures of outcomes by diagnoses and procedures
- Data can be cross-classified by patient and hospital characteristics
- Can produce county-level statistical maps
- Recently redesigned

www.hcupnet.ahrq.gov/



HCUPnet Can Answer a Variety of Questions

- What percentage of hospitalizations for children are uninsured, by State?
- What are the most expensive conditions treated in U.S. hospitals?
- What is the trend in hospitalizations for depression?
- Will there be a sufficient number of cases to do my analysis?
- How do my estimates and calculations compare with HCUPnet (validation)?

Examples of What HCUPnet Provides …

Step-by-step queries on:	Specialized queries by:	Ready-to-use statistics on:
Hospital inpatient data (SID, NIS, KID, NRD)	• Overall inpatient stays • Select conditions or procedures	• Trends in inpatient stays • Related conditions and procedures • Readmissions (NRD)
Emergency department (ED) data (SID, SEDD, NEDS)	• Overall ED visits • Select conditions or procedures	• Trends in ED visits • Percent of patients admitted versus discharged from the ED (i.e., treat-and-release)
Ambulatory surgery (AS) data (SASD)	• Overall AS encounters • Select conditions or procedures	• Percent of cases treated in the inpatient versus AS settings
Community-level statistics	• County-level, regional, or U.S.-Mexico border State statistics	• Inpatient stays for alcohol and other drugs

How does HCUPnet Work?

- Step 1: What kind of data are you looking for?
- Step 2: Do you want information on a specific diagnosis or procedure?
- Step 3: Create your analysis
- Step 4: View and update your data results in real time
- Step 5: View your results in detailed graphs and maps
- Step 6: Export your data for future use

HCUPnet Versus Full HCUP Databases

Capability	HCUPnet Can Produce...	HCUP Databases Can Produce…
Simple statistics	✓	✓
More complicated queries		✓
Sample size calculations	✓	✓
Trends analyses	✓	✓
Multivariate analyses		✓
Rank order of diagnoses and procedures	✓	✓
Z-test calculator for significance testing	✓	
Validation of results obtained from the HCUP databases	✓	

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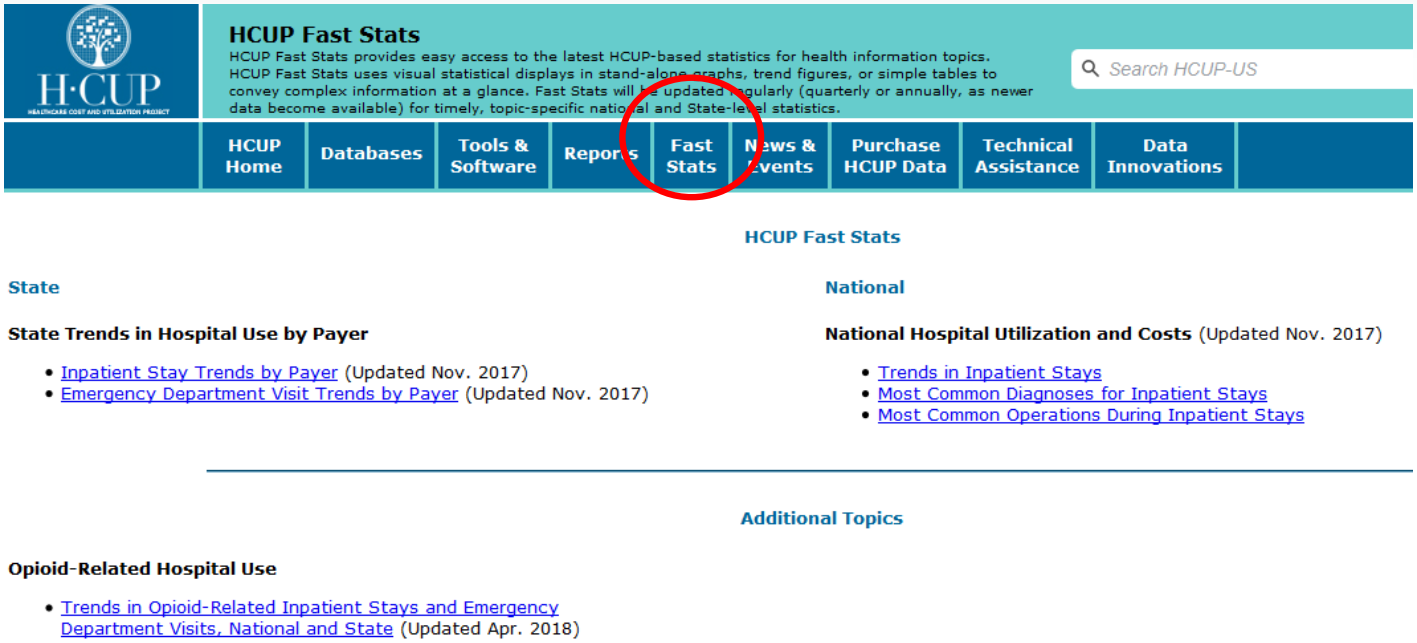
HCUP Fast Stats



- HCUP Fast Stats provides easy access to the latest HCUP-based statistics for health information topics.
- Uses visual statistical displays in stand-alone graphs, trend figures, or simple tables to convey complex information at a glance.
- Information will be updated regularly (quarterly or annually, as newer data become available).

www.hcup-us.ahrq.gov/faststats/landing.jsp

HCUP Fast Stats – *State Trends in Inpatient Stays by Payer*

HCUP Fast Stats - State Trends in Inpatient Stays by Payer

HCUP Fast Stats provides easy access to the latest HCUP-based statistics for health information topics. This section provides State-level trends in hospital inpatient stays by expected payer.

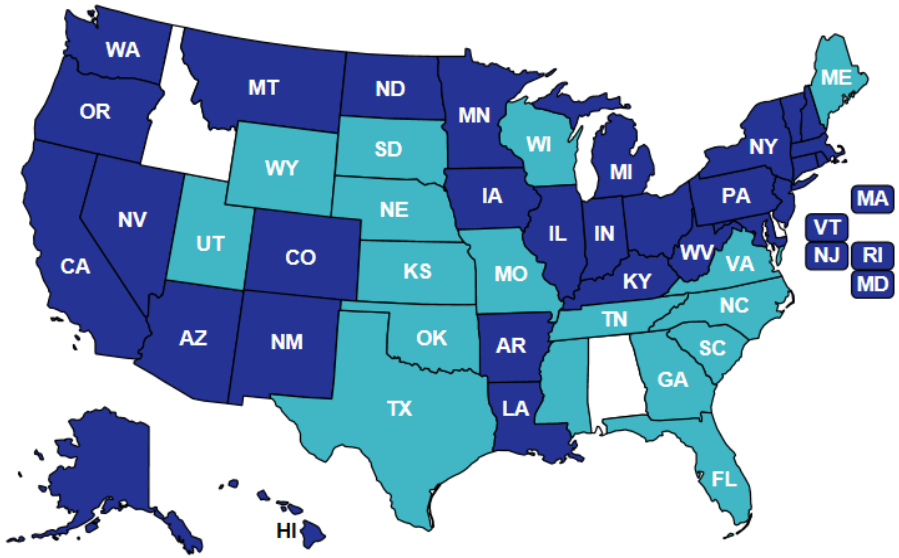
Home | Databases | Tools & Software | Reports | Fast Stats | News & Events | Purchase HCUP Data | Technical Assistance | Data Innovations

State Trends in Inpatient Stays by Payer

Click map to select one of the identified States, or select from list and click Select: Arizona* Select *Medicaid expansion State

Information is available for labeled States.

A tutorial for State Trends in Inpatient Stays by Payer is available.



Medicaid expansion States in HCUP | Medicaid nonexpansion States in HCUP | Non-HCUP States

HCUP Fast Stats – *State Trends in Emergency Department Visits by Payer*

HCUP Fast Stats - State Trends in Emergency Department Visits by Payer

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State Trends in Emergency Department Visits by Payer

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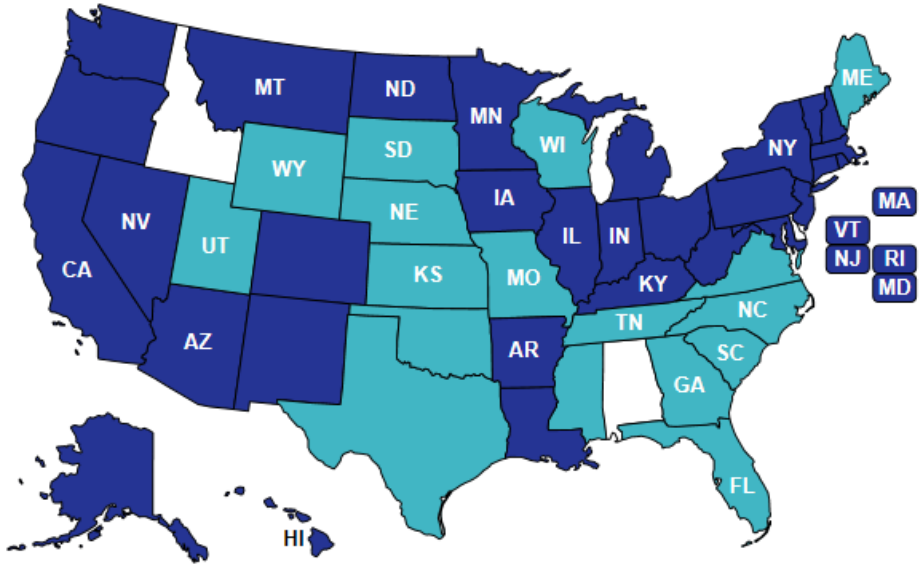
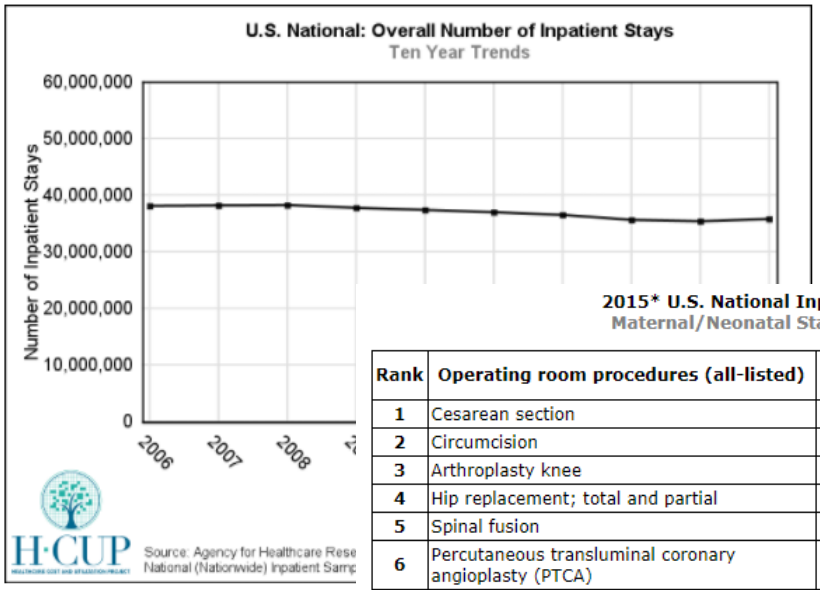


Medicaid expansion States in HCUP | Medicaid nonexpansion States in HCUP | Non-HCUP States

HCUP Fast Stats – *National Hospital Utilization and Costs*

- Includes information on trends in inpatient stays, the most common diagnoses for inpatient stays, and the most common operations during inpatient stays.



2015* U.S. National Inpatient Stays
Maternal/Neonatal Stays Included

Rank	Principal diagnosis	Total number of stays	Rate of stays per 100,000
1	Liveborn	*	1,195
2	Septicemia (except in labor)	*	552
3	Osteoarthritis	*	339
4	Congestive heart failure; nonhypertensive	*	297
5	Pneumonia (except that caused by tuberculosis or sexually transmitted disease)	*	276
6	Mood disorders	*	267
7	Cardiac dysrhythmias	*	212
	graft	*	203
		*	196
	erium affecting	*	195

Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP),

otes & Methods.

2015* U.S. National Inpatient Stays
Maternal/Neonatal Stays Included

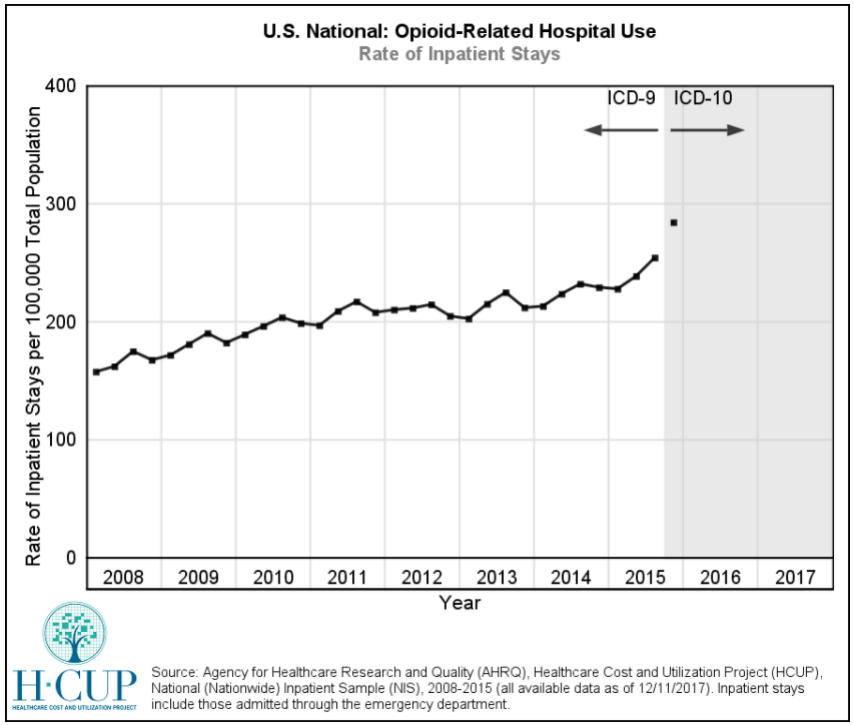
Rank	Operating room procedures (all-listed)	Total number of stays	Rate of stays per 100,000
1	Cesarean section	*	387
2	Circumcision	*	336
3	Arthroplasty knee	*	236
4	Hip replacement; total and partial	*	167
5	Spinal fusion	*	147
6	Percutaneous transluminal coronary angioplasty (PTCA)	*	147
7	Laminectomy; excision intervertebral disc	*	136
8	Other OR procedures on vessels other than head and neck	*	133
9	Partial excision bone	*	115
10	Cholecystectomy and common duct exploration	*	113

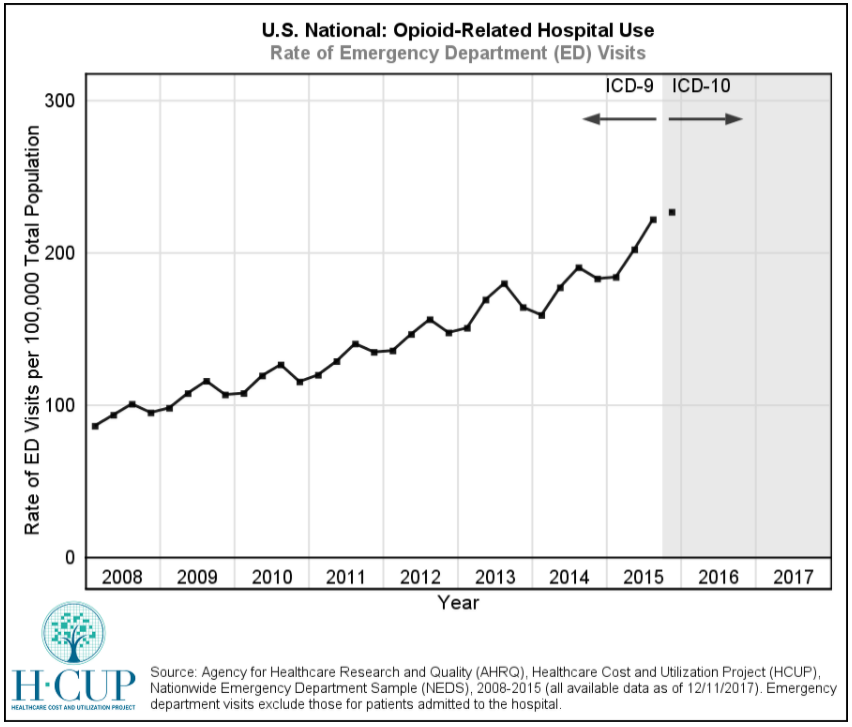
Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2015

**2015 Caution: Limited Reporting. See Data Notes & Methods.*

HCUP Fast Stats – *Opioid-Related Hospital Use*

- *Opioid-Related Hospital Use*, provides information on opioid-related inpatient stays and ED visits overall and by age group, sex, community-level income, and rural/urban location. Trends are presented graphically as population-based rates for the U.S. and by State.





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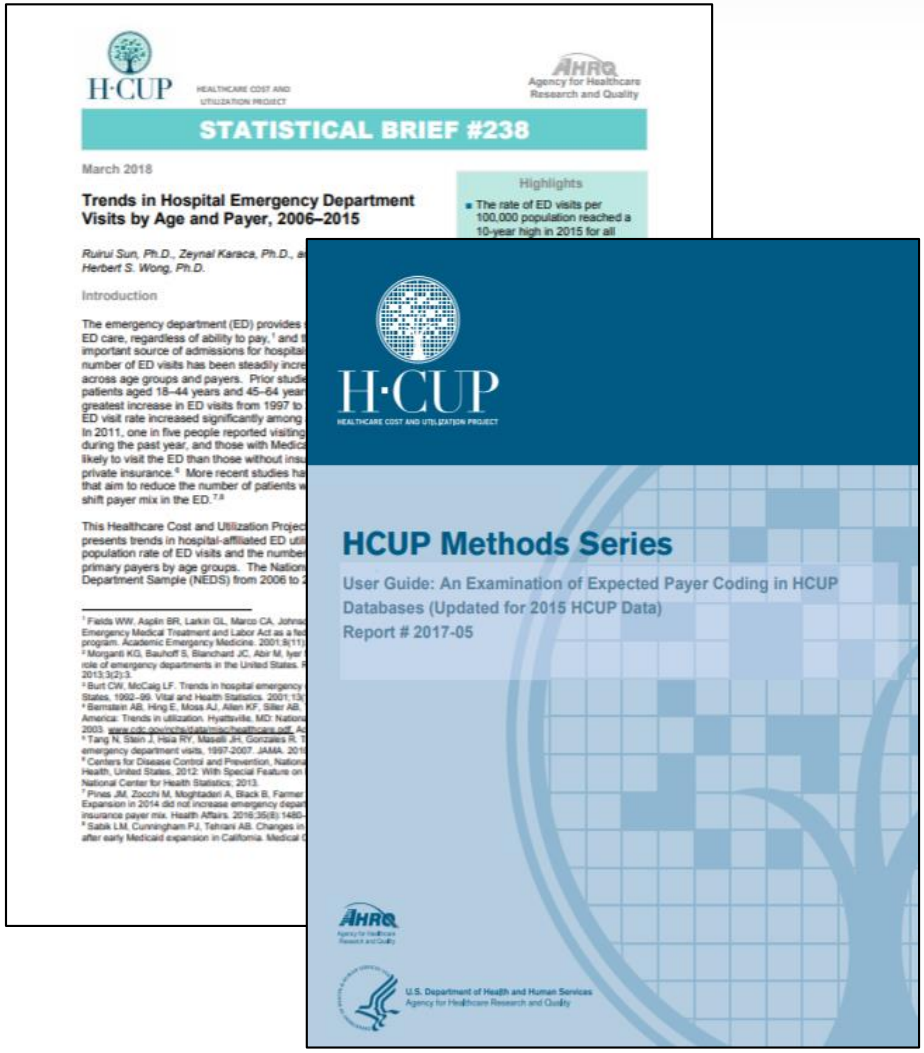
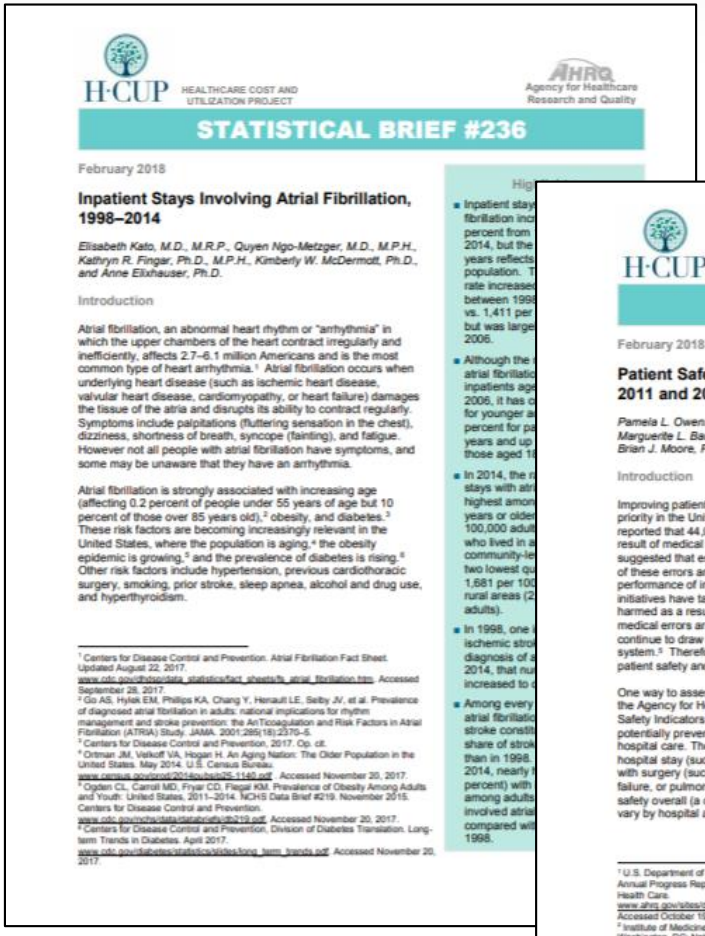
HCUP Publications

- **Statistical Briefs**
- **Methods Series Reports**



Statistical Brief Topics



H-CUP HEALTHCARE COST AND UTILIZATION PROJECT

Agency for Healthcare Research and Quality

STATISTICAL BRIEF #236

February 2018

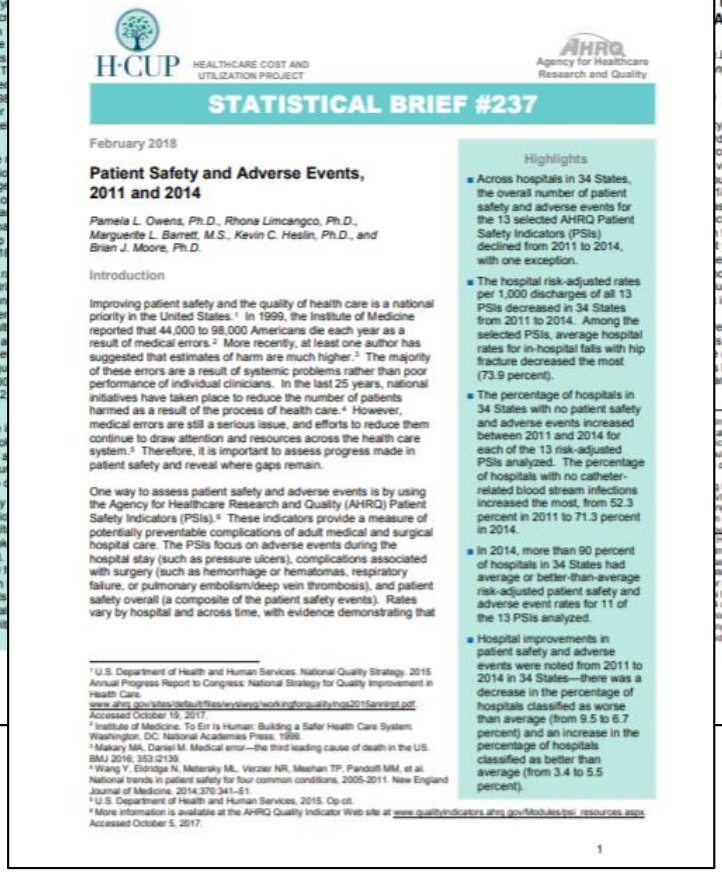
Inpatient Stays Involving Atrial Fibrillation, 1998–2014

Elisabeth Kato, M.D., M.R.P., Quyen Ngo-Metzger, M.D., M.P.H., Kathryn R. Fingar, Ph.D., M.P.H., Kimberly W. McDermott, Ph.D., and Anne Elixhauser, Ph.D.

Introduction

Atrial fibrillation, an abnormal heart rhythm or "arrhythmia" in which the upper chambers of the heart contract irregularly and inefficiently, affects 2.7–6.1 million Americans and is the most common type of heart arrhythmia.[1] Atrial fibrillation occurs when underlying heart disease (such as ischemic heart disease, valvular heart disease, cardiomyopathy, or heart failure) damages the tissue of the atria and disrupts its ability to contract regularly. Symptoms include palpitations (fluttering sensation in the chest), dizziness, shortness of breath, syncope (fainting), and fatigue. However not all people with atrial fibrillation have symptoms, and some may be unaware that they have an arrhythmia.

Atrial fibrillation is strongly associated with increasing age (affecting 0.2 percent of people under 55 years of age but 10 percent of those over 85 years old),[2] obesity, and diabetes.[3] These risk factors are becoming increasingly relevant in the United States, where the population is aging,[4] the obesity epidemic is growing,[5] and the prevalence of diabetes is rising.[6] Other risk factors include hypertension, previous cardiothoracic surgery, smoking, prior stroke, sleep apnea, alcohol and drug use, and hyperthyroidism.



H-CUP HEALTHCARE COST AND UTILIZATION PROJECT

Agency for Healthcare Research and Quality

STATISTICAL BRIEF #237

February 2018

Patient Safety and Adverse Events, 2011 and 2014

Pamela L. Owens, Ph.D., Rhona Limcangco, Ph.D., Marguerite L. Barrett, M.S., Kevin C. Heslin, Ph.D., and Brian J. Moore, Ph.D.

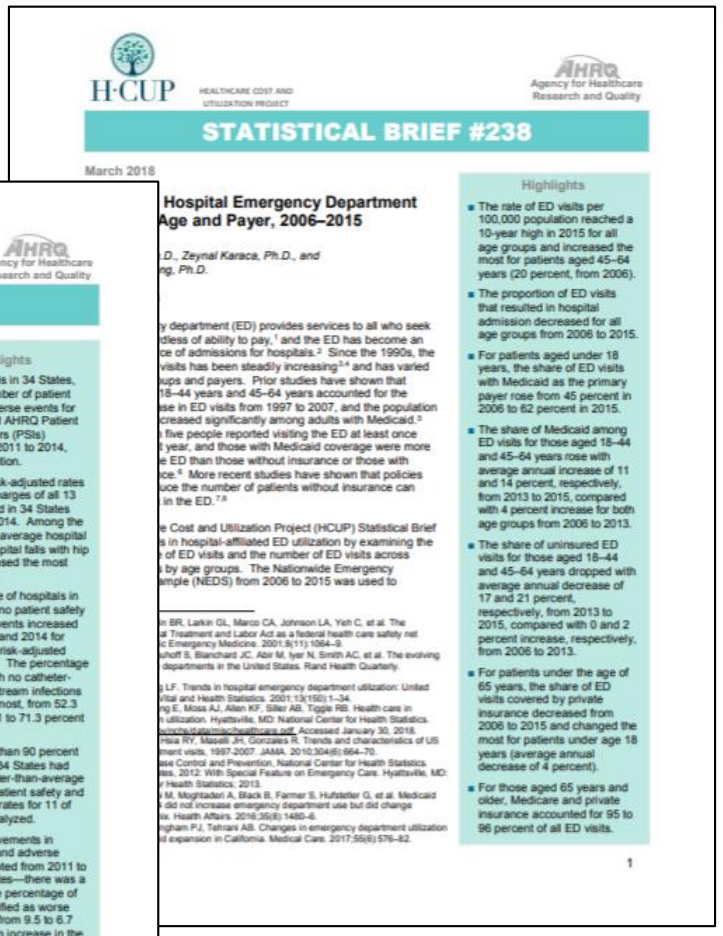
Introduction

Improving patient safety and the quality of health care is a national priority in the United States.[1] In 1999, the Institute of Medicine reported that 44,000 to 98,000 Americans die each year as a result of medical errors.[2] More recently, at least one author has suggested that estimates of harm are much higher.[3] The majority of these errors are a result of systemic problems rather than poor performance of individual clinicians. In the last 25 years, national initiatives have taken place to reduce the number of patients harmed as a result of the process of health care.[4] However, medical errors are still a serious issue, and efforts to reduce them continue to draw attention and resources across the health care system.[5] Therefore, it is important to assess progress made in patient safety and reveal where gaps remain.

One way to assess patient safety and adverse events is by using the Agency for Healthcare Research and Quality (AHRQ) Patient Safety Indicators (PSIs).[6] These indicators provide a measure of potentially preventable complications of adult medical and surgical hospital care. The PSIs focus on adverse events during the hospital stay (such as pressure ulcers), complications associated with surgery (such as hemorrhage or hematomas, respiratory failure, or pulmonary embolism/deep vein thrombosis), and patient safety overall (a composite of the patient safety events). Rates vary by hospital and across time, with evidence demonstrating that

Highlights

- Across hospitals in 34 States, the overall number of patient safety and adverse events for the 13 selected AHRQ Patient Safety Indicators (PSIs) declined from 2011 to 2014, with one exception.
- The hospital risk-adjusted rates per 1,000 discharges of all 13 PSIs decreased in 34 States from 2011 to 2014. Among the selected PSIs, average hospital rates for in-hospital falls with hip fracture decreased the most (73.9 percent).
- The percentage of hospitals in 34 States with no patient safety and adverse events increased between 2011 and 2014 for each of the 13 risk-adjusted PSIs analyzed. The percentage of hospitals with no catheter-related blood stream infections increased the most, from 52.3 percent in 2011 to 71.3 percent in 2014.
- In 2014, more than 90 percent of hospitals in 34 States had average or better-than-average risk-adjusted patient safety and adverse event rates for 11 of the 13 PSIs analyzed.
- Hospital improvements in patient safety and adverse events were noted from 2011 to 2014 in 34 States—there was a decrease in the percentage of hospitals classified as worse than average (from 9.5 to 6.7 percent) and an increase in the percentage of hospitals classified as better than average (from 3.4 to 5.5 percent).



H-CUP HEALTHCARE COST AND UTILIZATION PROJECT

Agency for Healthcare Research and Quality

STATISTICAL BRIEF #238

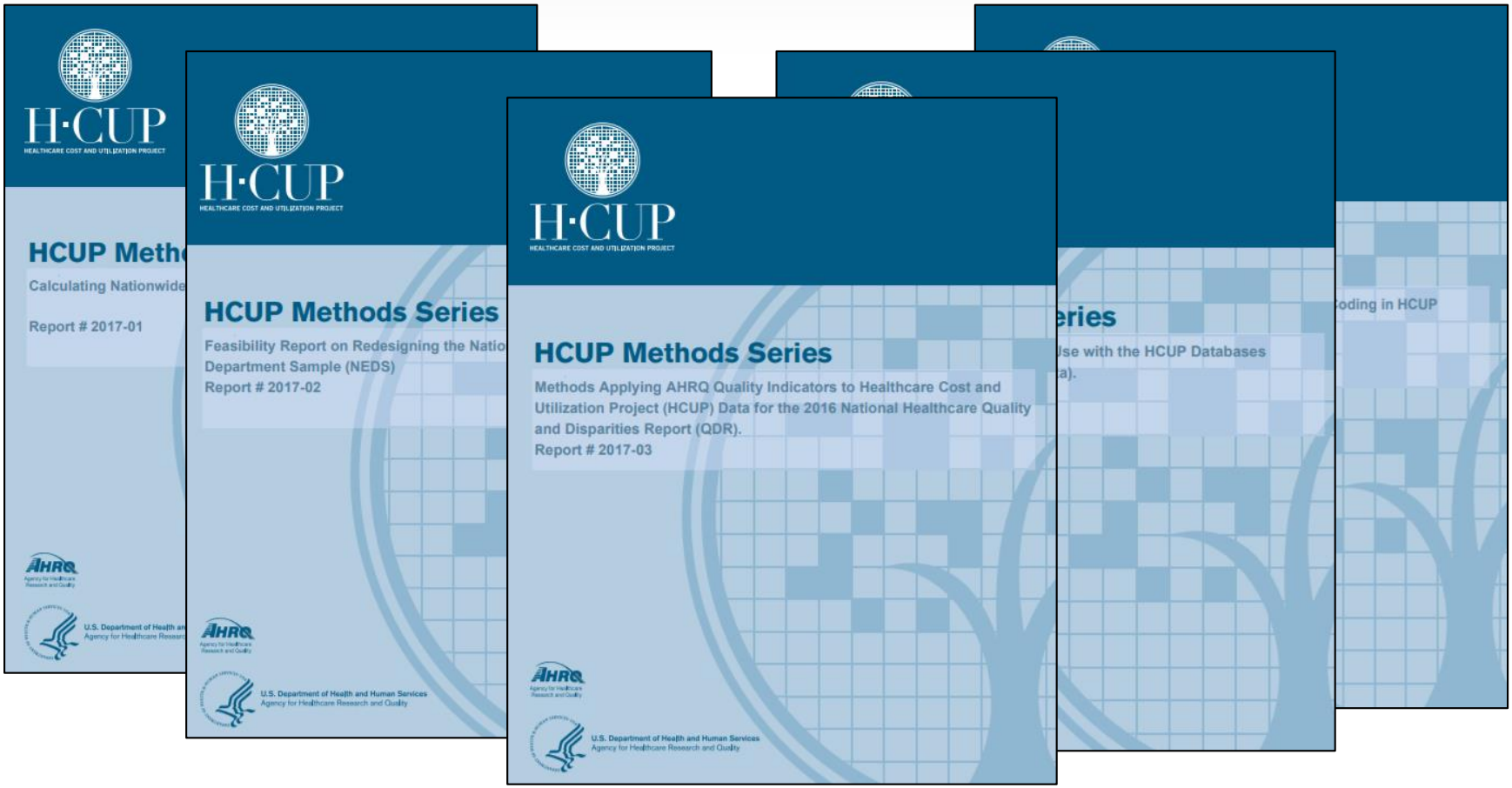
March 2018

Hospital Emergency Department Age and Payer, 2006–2015

Highlights

- The rate of ED visits per 100,000 population reached a 10-year high in 2015 for all age groups and increased the most for patients aged 45–64 years (20 percent, from 2006).
- The proportion of ED visits that resulted in hospital admission decreased for all age groups from 2006 to 2015.
- For patients aged under 18 years, the share of ED visits with Medicaid as the primary payer rose from 45 percent in 2006 to 62 percent in 2015.
- The share of Medicaid among ED visits for those aged 18–44 and 45–64 years rose with average annual increase of 11 and 14 percent, respectively, from 2013 to 2015, compared with 4 percent increase for both age groups from 2006 to 2013.
- The share of uninsured ED visits for those aged 18–44 and 45–64 years dropped with average annual decrease of 17 and 21 percent, respectively, from 2013 to 2015, compared with 0 and 2 percent increase, respectively, from 2006 to 2013.
- For patients under the age of 65 years, the share of ED visits covered by private insurance decreased from 2006 to 2015 and changed the most for patients under age 18 years (average annual decrease of 4 percent).
- For those aged 65 years and older, Medicare and private insurance accounted for 95 to 96 percent of all ED visits.

HCUP Methods Reports



Methodological information on the HCUP databases and software tools

Reports

Healthcare Cost and Utilization Project (HCUP) reports include new findings, publications, research notes b
issues. These products are developed by the Agency for Healthcare Research and Quality (AHRQ) through

www.hcup-us.ahrq.gov/reports.jsp

HCUP Home | Databases | Tools & Software | Reports | Fast Stats | News & Events | Purcha HCUP Data | Assistance | Innovations

Favorites

HCUP Statistical Briefs
Statistical Briefs are simple, descriptive reports on a variety of specific health-care related issues. A full list is available by topic and chronological order. The most recent briefs are:

- Trends in Hospital Emergency Department Visits by Age and Payer, 2006-2015
- Patient Safety and Adverse Events, 2011 and 2014

ICD-10-CM/PCS Resources
These resources summarize key issues anticipated by researchers when analyzing health services outcomes using HCUP databases that include International Classification of Diseases, Tenth Revision, Clinical Modification/Procedure Coding System (ICD-10-CM/PCS) coding:

- General Information about ICD-10
- HCUP Databases and ICD-10 Related Data Elements
- Doing Analysis with ICD-10 Data

HCUP Infographics
Infographics provide a visual representation of Statistical Brief data. A full list is available. The most recent infographic is:

- Characteristics of Hospital Stays Involving Malnutrition, 2013 (PDF file, 734 KB)

Information About Using HCUP Data

HCUP Methods Series
Methods Series reports, organized by topic and chronological order, feature a broad array of methodological information on the HCUP databases and software tools. The most recent reports are:

- Population Denominator Data for Use with the HCUP Databases (Updated with 2016 Population Data) (PDF file, 477 KB)
  Appendix A Population Data Tables (in ZIP format for downloading)
- User Guide: An Examination of Expected Payer Coding in HCUP Databases (Updated for 2015 HCUP Data) (PDF file, 391 KB)
  Supplements 1-3 (PDF file, 678 KB)

HCUP Nationwide Database Reports
These reports are specific to the design and content of the HCUP nationwide databases.

- National (Nationwide) Inpatient Sample (NIS)
- Kids' Inpatient Database (KID)
- Nationwide Emergency Department Sample (NEDS)
- Nationwide Readmissions Database (NRD)

HCUP State Database Reports
These reports are specific to the design and content of the HCUP state databases.

- State Inpatient Databases (SID)
- State Ambulatory Surgery and Services Databases (SASD)
- State Emergency Department Databases (SEDD)

Publications and Additional Topics

Topical Reports
Topical reports provide information about various priority populations.

- *Clostridium Difficile* Hospitalizations 2010-2014 (PDF file, 364 KB)
- Approaches to using race-ethnicity data for reducing disparities
- Utilization and spending for mental and substance use disorders

HCUP Publications
These links provide access to lists of publications, resources, and descriptions of research activities that are based on HCUP data, software products, and tools.

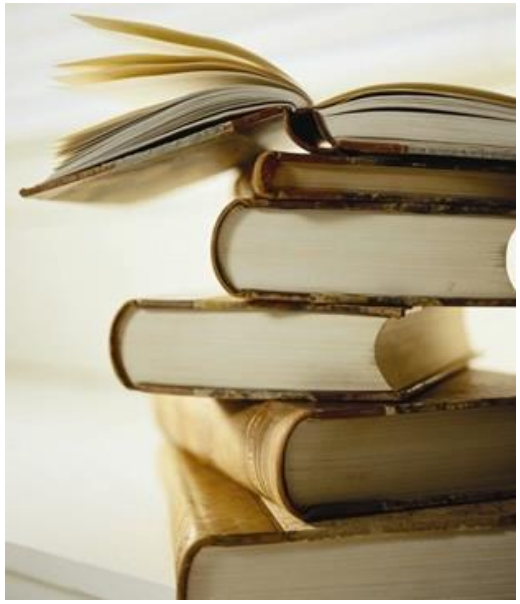
- Search for HCUP publications
- Research Spotlights on recent peer-reviewed journal articles
- Review comprehensive list of AHRQ publications

HCUP Archive
This archive features a broad array of information based on HCUP databases and other related reports.

- HCUP Projections (2012-2016)
- The Value of Hospital Discharge Data (PDF file, 664 KB) (Posted May 2005)
- HCUP Facts and Figures (2005-2009)
- HCUP Highlights (2001-2003)
- HCUP Fact Books (1997-2004)
- HCUP National Statistics Archive (1992-1996)

Publications Search Page on HCUP-US Web Site

- **Simple or advanced search options**
  - Data Year
  - Database, Tool, & Product
  - Author
  - Title
  - State



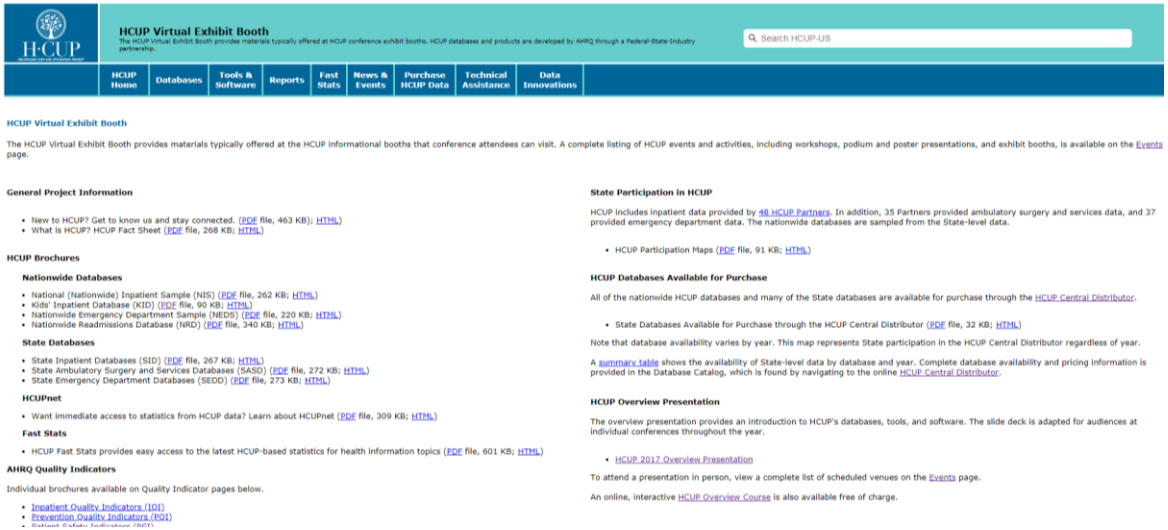
More than 6,000 publications use HCUP data or products

Presentation Objectives Part II

- Tools & Software
- Supplemental Files
- HCUPnet Overview
- HCUP Fast Stats
- Publications and Publication Search
- How to Access HCUP Resources

Visit HCUP's Virtual Exhibit Booth

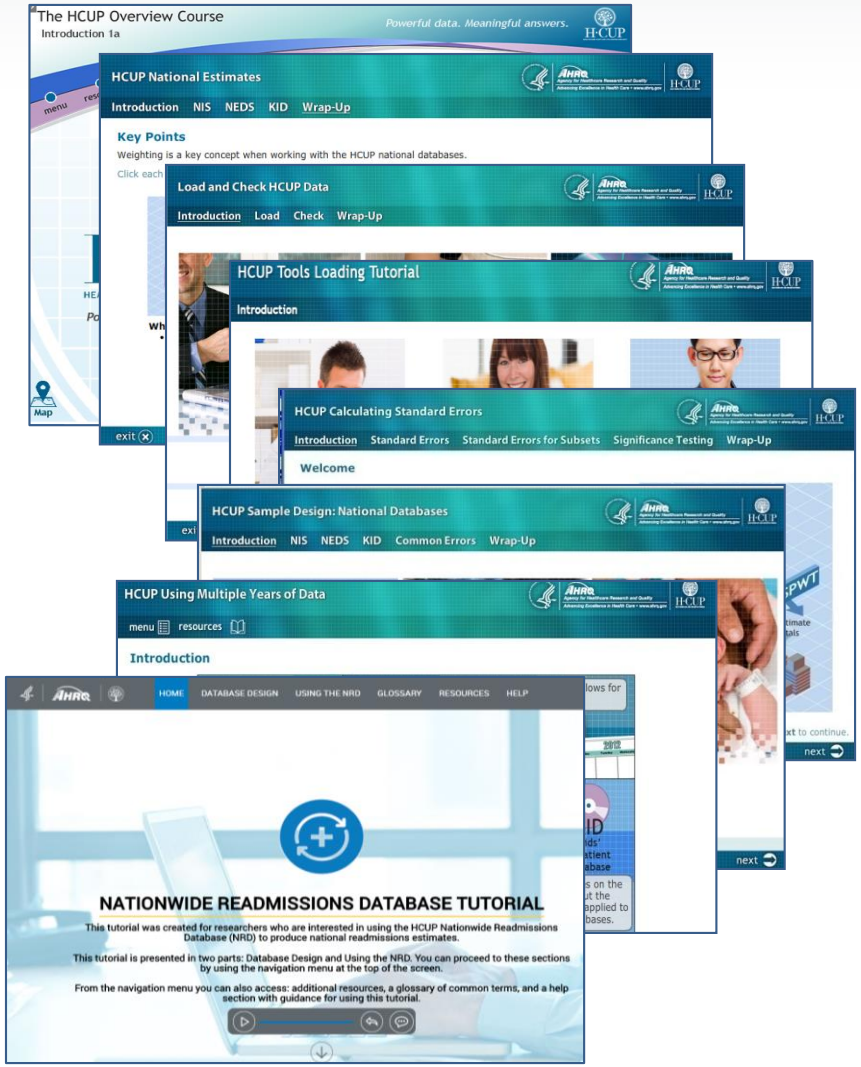
- The HCUP Virtual Exhibit Booth provides materials typically offered at the HCUP conference exhibit booths
- Includes brochures, participation maps, an overview presentation of HCUP, and additional information that provides general project information



www.hcup-us.ahrq.gov/news/exhibit_booth.jsp

Interactive Online HCUP Tutorials &Training Courses

- HCUP Overview Course
- Producing National HCUP Estimates
- Load and Check HCUP Data
- HCUP Tools Loading **NEW**
- Calculating Standard Errors
- HCUP Sample Design
- Multi-Year Analysis
- Nationwide Readmissions Database (NRD)



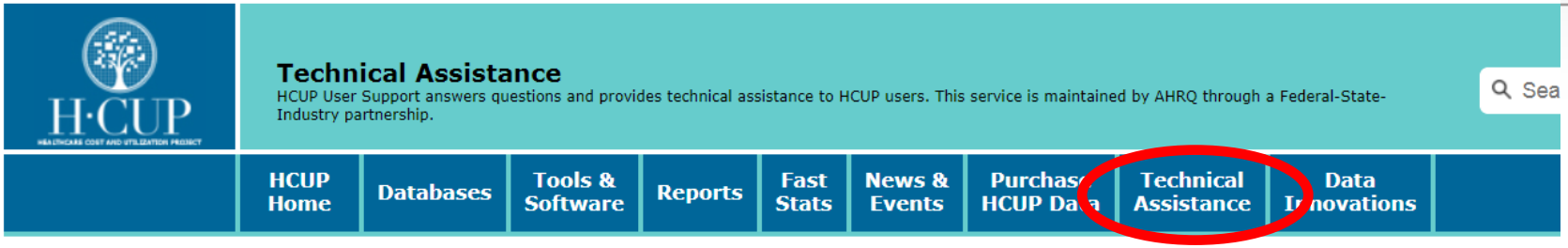
Using HCUP Technical Assistance

Active Technical Assistance

- Responds to inquiries about HCUP data, products, and tools
- Collects user feedback and suggestions for improvement

E-mail: hcup@ahrq.gov

HCUP-US for Technical Assistance



Need Help?

HCUP FAQs
The HCUP FAQs provide answers to commonly asked questions about HCUP databases, software tools, supplemental files, and other products.

HCUP Databases
The HCUP Databases page provides detailed database overviews, information on obtaining the databases, and additional resources and documentation to assist you in using the databases. Visit the Purchase HCUP Data page for additional information on obtaining HCUP databases.

HCUP Publishing Requirements
For information on publishing with HCUP data, please review the HCUP publishing requirements.

HCUP Virtual Exhibit Booth
The HCUP Virtual Exhibit Booth provides educational overview materials typically offered for conference attendees at HCUP informational booths.

HCUP Index
To search for an HCUP topic, please review the Index.

HCUP Training & Tutorials

HCUP Overview Course
To learn more about HCUP, take the *interactive, modular* HCUP Overview Course (approximately 90 minutes) that provides information about HCUP data, software tools, and products. The course covers the features, capabilities, and potential uses of HCUP resources.

HCUP Data Use Agreement Training Tool
All purchasers and users of HCUP data must complete the HCUP Data Use Agreement (DUA) Training Course (approximately 15 minutes) and sign an HCUP DUA before using the data. The DUA is a legally binding agreement with AHRQ that defines how you can use HCUP data.

HCUP On-line Tutorial Series
To learn more about concepts essential to conducting effective research with HCUP, refer to the *interactive, modular* HCUP On-line Tutorial Series. The courses are designed to answer technical questions you may have related to HCUP data and products.

Checklist for Working With HCUP Databases
The Checklist for Working With the NIS reviews best practices and solutions for common errors. Many of the principles and resources also apply to other HCUP databases.

www.hcup-us.ahrq.gov/techassist.jsp

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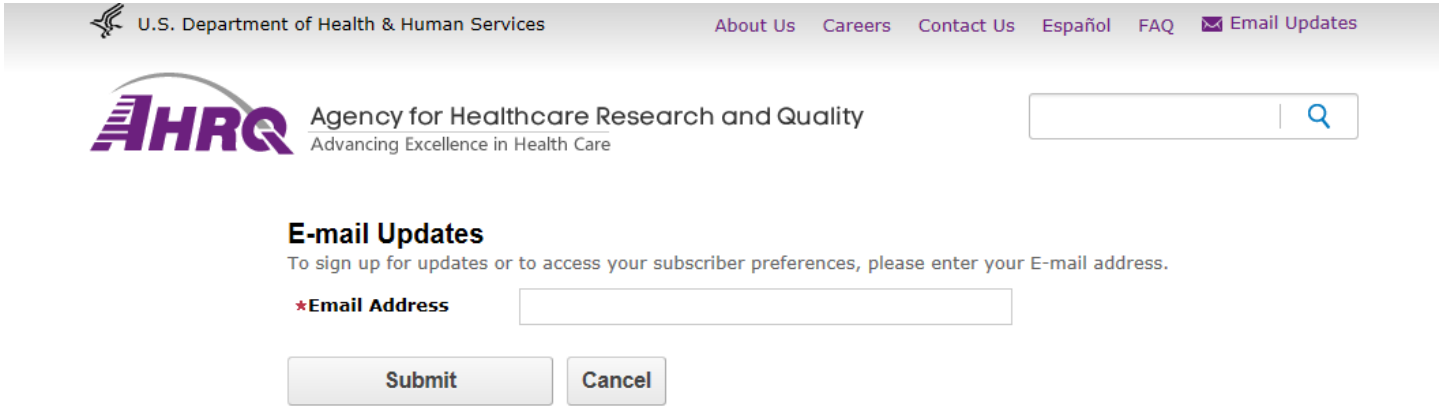

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Healthcare Cost and Utilization Project (HCUP)

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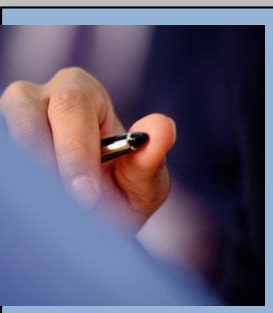
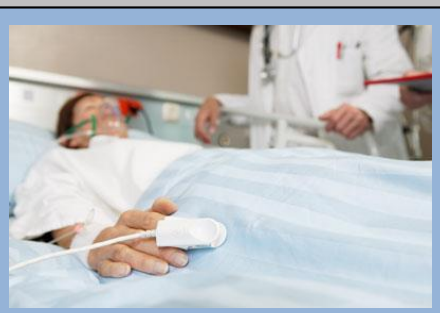
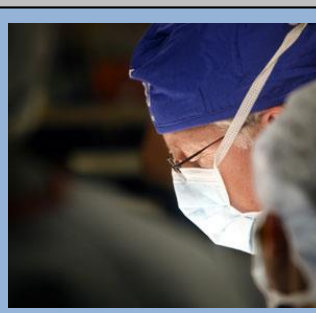
HEALTHCARE COST AND UTILIZATION PROJECT







Questions/Comments?

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